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ABSTRACT

This monograph is a report on the impact vocational education can have on improving worker productivity. Specifically, the monograph presents a discussion of the relationship between vocational education and productivity and identifies potential areas of impact. The first chapter discusses the concept of productivity and its relationship to vocational education and training. Chapter 2 focuses on the changing characteristics of the workforce, examining various subpopulations, the educational level and expectations of workers, and implications for productivity and vocational education. Chapter 3 presents a discussion of the various types of vocational education and training and their potential impact on productivity, while the fourth chapter considers the effect on productivity of adjustments in organizational structures and discusses the role of vocational education in these adjustments. Chapter 5 discusses the relationship between small businesses and increased productivity and identifies target groups that would benefit from entrepreneurship education. Discussed next is the importance of establishing cooperative efforts among vocational education, the private business sector, and federal employment and training programs to increase productivity. Finally, chapter 7 discusses the future implications for productivity and vocational education related to economic and demographic trends such as a decentralized population, the geographic shift in population from the North to the South, moving from a national to a local economy, problems in measuring productivity, and restructuring from an industrial society. (KC)

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POTENTIAL ROLES OF
VOCATIONAL EDUCATION IN
IMPROVING THE PRODUCTIVITY
OF THE WORKFORCE

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Vocational Education Can Have
on Improving Worker Productivity

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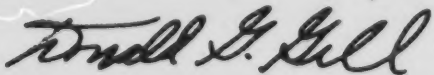
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FOREWORD

The 1980 revised Goals Statements of the Illinois State Board of Education clearly identify vocational education as a priority. Fourteen general thrusts for the advancement of vocational education in the 1980s have been identified. These thrusts provide direction for persons at the State and local levels concerned with vocational education programs and services designed to meet the human and economic development needs.

Assessing the impact that vocational education can have on improving worker productivity is related in some manner to at least eight of these thrusts. However, it is most directly related to the thrust of Incorporating New and Expanded Economic Concepts within Vocational Education. Vocational education must continue to play an important role in economic development. Determining ways in which vocational education can impact on improving the productivity of the workforce is central to this mission. The Illinois State Board of Education is pleased to make this publication available to assist individuals at the State and local levels to plan and design programs and services which compliment this mission.

Sincere appreciation is extended to the following individuals who served as advisers for their contributions to this monograph; Larry Bailey, Southern Illinois University; David Baker, Illinois State Chamber of Commerce; Burt Barnow, U.S. Department of Labor; Michael Borus, The Ohio State University; Barbara Creamean, University of Illinois; Rupert Evars, University of Illinois; John Grasso, West Virginia University; Joy Janssen, Illinois Vocational Association; Peter Johnson, Illinois State Advisory Council on Adult, Vocational and Technical Education; Charles Joley, Eastern Illinois University; Bernard Karsh, University of Illinois; Jerome Mark, Bureau of Labor Statistics; Nancy McIlvey, Illinois State Board of Education; David Murphy, Kemper Insurance and Finance Company; William Piland, Illinois State University; Kendrith Rowland, University of Illinois; Myron Rutledge, Caterpillar Tractor Company; John Savage, Western Illinois University; Ronald Stadt, Southern Illinois University; David Stern, University of California at Berkeley; David Stevens, University of Missouri; Dennis Sullivan, American Productivity Center, Houston; David Tiedeman, University of Southern California; and Grey Warner, Illinois Department of Commerce and Community Affairs.



Donald G. Gill
State Superintendent of Education

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INTRODUCTION

The slowdown in productivity growth in the United States is one of the most significant economic problems of recent years. Productivity is a complex concept. The topic is surrounded by controversy and confusion with disagreement on definitions, measurement techniques, and identification of factors which contribute to a decline or increase in the productivity growth rate. Despite the variations in definitions and measurement techniques, there is general agreement on the importance of the problem and the need for further investigation. Much needs to be learned about the effects of various factors on productivity.

A prerequisite for any discussion of productivity is the recognition of considerable overlap among the topics and issues surrounding the concept. It is difficult, if not impossible, to separate other economic development topics and issues such as unemployment, inflation, and job creation from productivity.

The evidence suggests that vocational education can have an impact on worker productivity. However, further investigation is needed to describe the relationship and to identify specific areas of potential impact. There are many potential expanded roles which vocational education might pursue in an attempt to improve the productivity of the workforce. However, to be most effective, vocational education must determine just where it can legitimately impact on productivity. Vocational education cannot do it all.

Productivity is a broad concept which includes the effects of capital investment, technology, and labor or human capital. Although vocational education may influence all of these areas to some degree, it appears that vocational education can have the most direct impact on human capital.

Therefore, the major purpose of this monograph is to report on the impact vocational education can have on improving worker productivity. Specifically, the monograph presents a discussion of the relationship between vocational education and productivity and identifies potential areas of impact. To accomplish this purpose, a comprehensive search of literature and research was conducted to identify employee and employer barriers to increased worker productivity and existing education and training programs and services that can help to increase worker productivity.

An advisory panel was established consisting of representatives from vocational education, the employment and training system, and commerce and industry to help provide direction to the project and to react to and critique the initial drafts of the monograph chapters. Obviously, the areas for potential impact identified and discussed in the monograph do not represent a complete list of all the possibilities. In fact, only seldom was agreement expressed on the topic at hand by all members of the advisory panel. The chapters included in the monograph and the areas identified as being those where vocational education can have increased impact on improving the productivity of the workforce do, however, at the very least, represent an important, and in some cases, an expanded role for vocational education.

The first chapter discusses the concept of productivity and its relationship to vocational education and training. Chapter two focuses on the changing characteristics of the workforce examining various subpopulations, the educational level and expectations of workers, and implications for productivity and vocational education. Chapter three presents a discussion of the various types of vocational education and training and their potential impact on productivity. The fourth chapter considers the effect

on productivity of adjustments in organizational structures and discusses the role of vocational education in these adjustments. Chapter five discusses the relationship between small businesses and increased productivity and identifies target groups who would benefit from entrepreneurship education. The sixth chapter considers the importance of establishing cooperative efforts among vocational education, the private business sector, and federal employment and training programs to increase productivity. Finally, chapter seven discusses the future implications for productivity and vocational education related to economic and demographic trends such as a decentralized population, the geographic shift in population from the north to the south, moving from a national to a local economy, problems in measuring productivity, and restructuring from an industrial society.

THE CONCEPT OF PRODUCTIVITY AND ITS RELATIONSHIP TO VOCATIONAL EDUCATION AND TRAINING

Introduction

Productivity means many things to different people. It is a concept which is often misinterpreted, and to many, conjures up images of speeded-up assembly lines.

Productivity affects virtually all broad economic concerns, e.g., industrialization, automation, tax reform, cost-price squeeze, and competition in foreign markets (Kendrick, 1961). Productivity growth is important to all Americans. It is a key factor in determining improvements in living standards because it fuels economic expansion, provides for long-run growth in jobs, and helps to restrain inflation.

The slowdown in the productivity growth rate in the United States during the past fifteen years has caused serious concern (Paul, 1980). According to Parrish (1980), the annual increase in productivity declined from about three percent in the 1950s to about two percent during the last half of the 1960s and the early 1970s, to about one percent during the past five years. In 1980 there was a decline of .04 percent. The Council of Economic Advisors stated that the slowdown in productivity growth in the United States is one of the most significant problems in recent years.

Defining and Measuring Productivity

The various methods of measuring productivity allow for numerous interpretations and make it difficult to compare statistics generated from productivity measures. Although many productivity measures exist, the

unifying concept among them is that productivity is a ratio of outputs (goods and services) to inputs (labor, capital and material resources) (Kendrick, 1977). The rate of change, up or down, of the productivity ratio is called the productivity growth rate.

The various measures of productivity can be grouped into two types. The first type is total productivity measurement. Total productivity is a measure which relates the outputs of goods and services to all inputs used in production. When outputs are related to all associated inputs, it is possible to determine the net savings in the real cost of production over time, that is, productive efficiency (Katzell, 1975; Kendrick, 1977; National Research Council, 1979).

The second type of productivity measurement is partial productivity, and is more commonly used. Partial productivity is a measure which relates outputs to one particular class of inputs. Partial productivity measurements are useful, but limited tools. They are useful because they reflect the input cost, expressed in dollars or physical terms, associated with the production of a specified output. Thus, they allow tracking of a part of the performance of an organization being examined. The most commonly used partial productivity measure is output per labor hour. This partial productivity measure is useful as an indicator of labors' contribution to developing the defined output. Workers' skills and efforts are clearly important inputs. However, the productivity measure of output per labor hour overstates labors' contribution because the contributions of capital, material resources, and energy are ignored.

Productivity measures also express the combined influence of a number of causal forces on the ratio of outputs to inputs. Causal forces

include all the variables in an interrelated economic system, such as production techniques, capital equipment, workforce skills, managerial ability, rate of capacity utilization, scale of operations, materials flow, product mix, state of labor-management relations, and quality of the work environment (Mark, 1971; National Center for Productivity and Quality of Working Life, 1978).

In addition, managers tend to include such causal factors as absence of disruption and trouble, and absenteeism and turnover rates (Katzell, 1975). The negative intangibles, such as sabotage, "shrinkage," and disruption tend to be viewed as elements of productivity more often by those in general management, service, wholesale or retail businesses, and small organizations than by persons in industrial relations, manufacturing, and large organizations.

The actual ratio of outputs to inputs can be adjusted to include factors which enhance the productivity of labor and capital. For example, Denison (1974) adjusted the hours of labor input for increases in efficiency due to increasing education, shortening of the length of the working year, and changes in the composition of the labor force. Literature from the managerial viewpoint indicates that productivity measures should include effectiveness in addition to efficiency. This involves not just how much of a product is produced or how much of a service is delivered at what cost, but also includes quality, timeliness and responsiveness (National Center for Productivity and Quality of Working Life, 1977; U.S. Office of Personnel Management, 1980).

However, disagreement exists as to whether factors such as quality should be reflected in productivity measures. Stevens (1950) stated that "productivity measures should not reflect the effectiveness of the products

or services produced in satisfying individual, organizational or social goals" (p. 6). He suggested that this is one source of the problems that the service sectors are having in defining output and measuring productivity. Whether or not qualitative factors are included in productivity measurement, it is vitally important that these variables are identified so that investigators can interpret the productivity measures.

There is general agreement that there has been a decline in the growth of productivity in the United States. But, the literature contains disagreement about the severity of the problem and how to increase productivity growth. Engineers are likely to give priority to technological change. Business people often promote capital formation and deregulation. Organized labor favors enhancing workers' skills and security (National Center for Productivity and Quality of Working Life, 1978). In reality, each of these factors affects productivity growth and are interrelated.

Relating Vocational Education to Productivity

The productivity measure used in this monograph is the ratio of output to labor hours. Although labor is only one source of productivity improvement, vocational education is most concerned with increasing the productivity of individuals as a means of increasing the productivity of the workforce. The focus of this monograph is on improving workers' contributions to productivity.

Historical data show that the largest proportion of productivity growth has come from the development and application of technology (Denison, 1974). Support for these data has also come from Japan. The major factor contributing to Japan's phenomenal productivity growth has been based in, and on, the application of technology. However, some observers believe that the point of diminishing returns has been reached

in technological advances, and suggest that the utilization of labor is the key to increasing productivity (Leach, 1980). Bere (1978) stated that the real untapped asset at most corporations is the energy of the human spirit and that it lies waiting like a coiled spring to releaze enormous potential for higher productivity" (p. 18). A report from the Industrial Relations Research Association stated that human resources - the intelligence, skill ingenuity and attitude of people - are at the heart of the entire structure of productivity. It is the people who are able to invent and innovate new technologies and capital equipment and who apply managerial skills and apply their art, craft and intelligence to the production process. This is not to suggest that workers are the primary factor in productivity improvement, but that they are a critical element which has often been overlooked.

The improved educational background of workers has had a positive overall effect on productivity. This effect was in praticular evidence during the post World War II period, when the educational level of the labor force rose significantly. The final report of the National Center for Productivity and Quality of Working Life (1978) indicated that the improved educational background of workers was one of the most important factors in productivity growth during the postwar period. A study by Leonor (1976) also concluded that education can influence productivity significantly in a dynamic work setting. Leonor suggested that as decision makers, "persons with better ability can grasp the opportunities afforded by new information faster than others" (p. 2). Because the life cycle of information is short in a setting of fast changing technology, the educated worker can take advantage of this crucial lead. The relationship between education and productivity is strongest when educational preparation

relates directly to the skills required on the job. Educational level can also have a negative effect on productivity if workers perceive themselves as being "underemployed" as related to their educational preparation.

Vocational education is an integral part of the total education system and has been identified as a key linkage between school and the workforce. Vocational education is directly linked to, and may be most concerned with, labor utilization. In many respects, the productivity of the workforce has always been a concern of vocational education. By nature, vocational education has concentrated on the appropriate preparation of workers for participation in the workforce. In recent years the mission has expanded to serve additional population groups and preparing people for job maintenance and job mobility, as well as for job acquisition. Therefore, vocational education shares the responsibility of adding to the understanding of the concept of productivity in the workforce and in determining how education can contribute to increased productivity.

The purpose, roles and responsibilities of vocational education, delineated in a position statement by the National Association of State Directors of Vocational Education (1980), provided evidence of the linkage between education, the workforce, and productivity. According to this paper, the main purposes of vocational education are to: a) provide individuals with the skills they need to attain economic freedom, and b) enhance productivity of local, state and national economies. More specific purposes of individual programs within education have been identified as:

- o Support and strengthen the relationship of education to work.
- o Equip individuals with marketable skills.
- o Foster full employment by providing a trained workforce to meet current and future labor market needs.

- o Supply a trained workforce which will attract and promote economic and industrial development.
- o Furnish individuals with information about the nature of work and work opportunities today and in the future.
- o Help people develop and apply decision making skills, particularly regarding work and careers.
- o Assist persons in mastering the basic literacy skills required to meet job specifications.
- o Develop people's organizational leadership skills.
- o Promote and support the values of free enterprise in a democratic society (p. 3).

These objectives support the linkage between vocational education and the workforce. Vocational education is committed to a well-rounded preparation of persons entering the workforce, which inherently incorporates achievement of an adequate productivity standard (Leach, 1980). Taylor (1978) stated that vocational education is productivity oriented and "teaches people the skills that lead to producing greater quantities of goods per hour of labor, to increased quality of output, to the knowledge of how to use resources more efficiently and with less waste and damage to the environment, and knowledge of how to apply labor and technology more efficiently and effectively" (p. 8). The remainder of this monograph examines specific areas and methods in which vocational education can have an impact on worker productivity.

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INCREASING PRODUCTIVITY BY CAPITALIZING ON CHANGING CHARACTERISTICS OF THE LABOR FORCE

Introduction

The nature of the labor force in the United States has undergone considerable transformation during the past decade. Changes are evident in the composition of the labor force as well as in the educational level, expectations and values of individual workers (Kerr, 1979; Katzell, 1979; Mark, 1979). The changing composition of the labor force, particularly the increased proportion of youth and females, has been identified as one of the causal factors in the declining growth of the productivity rate. The values and expectations of many workers have also changed since the social movements of the 1960s. Values such as self-fulfillment are often placed higher now, than success at work (Yankelovich, 1979). This changing value system has created a more diverse labor force. Individual differences among workers are more prominent and accepted. Traditional incentives in the work place may no longer motivate the majority of workers. If so, productivity is affected.

Changes in the composition of the labor force have been especially evident since World War II. The most abrupt changes occurred during the period 1966 to 1976. The growth rate of the labor force rose substantially during the 1960s so that presently more of the adult population is in the labor force than ever before (Mark, 1979). The age-sex composition has shifted substantially as the number of females and teenagers in the labor force has increased and the proportion of men has decreased. Thus, there is a more even distribution of work by sex and age groups (Kerr,

1979). As more attention is given to the training of special populations such as handicapped and developmentally disabled, elderly, economically disadvantaged, and limited English speaking, more change in the composition is likely to occur.

This chapter examines the changing composition of the labor force as it relates to productivity and vocational education. The labor force could be divided into numerous subpopulations but, it is necessary to limit the number of categories for discussion purposes. The subpopulations of women and youth were chosen because the increased proportion of these groups in the labor market have been identified as one factor which has affected productivity growth in recent years.

In addition, the literature on productivity indicates that the age composition of the labor force will shift in the next decade, with an increased proportion of older workers. Therefore, the subpopulation of the elderly is discussed in order to examine the special needs of this group.

The special subpopulations of handicapped, economically disadvantaged, and limited English speaking were chosen because the Vocational Education Amendments of 1976 (P.L. 94-482) Title II mandated that vocational education programs be provided to these three national priority populations. The amendments promote the development of special services for these groups to bring them into the mainstream of the labor force. Although services have often been provided to these special populations for humanitarian purposes, many observers are beginning to realize that the productive participation of these special populations in the labor force is central to the revitalization of the economy. Because economically disadvantaged, handicapped, and limited English speaking subpopulations

represent a significant portion of the labor force, increasing their opportunities to become productive workers can affect the overall productivity of the labor force.

The changing composition of the labor force affects the growth of the productivity rate. Rapid increases in the proportion of the subpopulations listed above in the labor force have had negative effects on productivity (Freeman, 1979, Moore, 1980; Kunze, 1979). These effects are related to how productivity is measured. Increasing the proportion of these subpopulations in the labor force can have a negative effect on total productivity growth because the workers are generally less experienced and are often employed in less productive jobs. Less productive jobs are those which require low-level skills and provide low wages. Productivity statistics generated from these occupations are low because of the way productivity is measured and not necessarily because individuals are less efficient or do not work as hard. As more workers from these subpopulations enter the labor force, individual productivity and total output will increase. However, productivity growth, if measured by output per labor hour, may decline. Because a large percentage of these groups are unemployed or underemployed, helping them to obtain skills so they can work at an appropriate job will increase their individual productivity. Vocational education is particularly interested in ways to impact individuals' productivity.

The effects of the changing composition of the labor force on productivity depend, in part, on how education and commerce and industry are able to respond to these changes. All of the subpopulations of the labor force are valuable to the economy. In the following sections, the characteristics of subpopulations of youth, females, elderly, handicapped, economically disadvantaged, and limited English speaking are examined and

the effects of these characteristics on productivity and implications for vocational education are discussed. In addition the effects on productivity of an increase in the average educational level attained by workers and the transformation of values for and attitudes toward work are discussed.

Youth

The number of young people entering the labor market rose sharply in the mid 1960s as a result of the post World War II baby-boom. The proportion of workers under the age of 35 years increased from 35 percent to 50 percent in the span of one decade (Ferman, 1979). Because more of these young people went to college, there was growth in the number of college-trained workers in the labor force during this period. During recent years, there has also been an increase in the percentage of youth who are combining work and school (Kerr, 1979).

The increased proportion of youth in the labor market is one factor which has contributed to the decline in the productivity rate (Kunze, 1979, Mark, 1979; Moore 1980). New entrants to the labor market are typically less productive because they lack experience. Different attitudes and expectations about the world of work are also evident in the young generation of workers which may also affect productivity (Etzioni, 1979).

For the decade ahead, it is predicted the age composition of the labor force will have a positive influence on productivity. During the 1980s, the postwar baby-boom workers will be absorbed into the labor market and the number of young workers entering the labor market will, for the first time, decline sharply because of the low birthrate during the 1960s (Freeman, 1979; Kerr, 1979; Mark, 1979). Productivity is expected to rise as the large proportion of post war baby-boom workers move into the more experienced and more productive higher age group. Yet, new problems

may emerge in the next decade as this large group of workers enters the prime work-age and competes for promotions and supervisory positions. Fierce competition may lead to career disappointment and job dissatisfaction, which, in turn, may affect productivity (Freeman, 1979). In addition, the question must be seriously addressed as to whether employment opportunities will keep pace with population growth. In an expanding economy this is not a problem. However, the American economy has ceased to grow.

Approximately 50 percent of the labor force is under 35 years of age. This percentage may change in the coming decades. But, it is safe to assume that there will always be youth who may be less productive in the labor force.

Females

The percentage of females in the labor force has been rising throughout the century, with an acceleration during World War II and an even more abrupt increase during the past decade (Gordon, 1979). Females constitute approximately 43 percent of the labor force (U.S. Department of Labor, 1980). The growth of female participation in the labor force over the past 30 years reflected a change in the age composition of the female labor force. In the 1950s and early 1960s the bulk of the increase occurred among women ages 45-64 years. In the late 1960s and 1970s the major source of growth was among female workers under 35 years of age, and the rate of older female workers entering the labor market leveled (Gordon, 1979; Freeman, 1979). The change in the age composition of the female labor force suggests that different causal factors are at work and that more women with young children are working (U.S. Department of Labor, 1978).

The increase in the proportion of the female labor force has been identified as contributing to the slowdown in the growth of the productivity rate (Moore, 1980). Traditionally, females have been less productive because they enter less productive occupations and because, as new entrants they are less experienced (Mark, 1979). Women are generally over-represented in occupations which are low-paying, do not require independent decision making, and have little autonomy. They are under-represented in top management positions in business and tenure track positions in education (Attwood, 1980). The lower productivity of females is therefore, in part, related to their occupations.

Explanations of occupational segregation by sex are numerous. An understanding of some of these factors may suggest ways in which the productivity of females could be enhanced. One explanation is that achievement and career motivation of females are inhibited by factors such as home/career conflicts, sex role orientation, low risk taking behavior, low academic self esteem, vicarious achievement motive, and fear of success (Farmer, 1977). These socialization factors are often reinforced by counselors, teachers and parents during the school years. Another explanation, the human capital theory, is that women choose to enter occupations for which earning losses are smallest and skills are least likely to deteriorate from anticipated periodic absences from the labor force over the life cycle (Polachek, 1979). A third explanation is the sex discrimination theory, which maintains that females face discriminatory barriers to entry into certain occupations. The effect of this factor has been reduced by the enforcement of equal employment opportunity laws (Beller, 1978).

Another cause of lower productivity of females appears to be role strain and is particularly evident among married, working women and

working mothers (Attwood, 1980; Farmer, 1979). The separation of occupational and family life contributes to stress and may interfere with optimal functioning of the worker on the job. Attwood (1980) suggested that if a family is not functioning well, productivity will almost certainly be reduced.

Predictions for the decade ahead indicate a continuing upward trend in the percentage of females entering the labor force (Kerr, 1979). It is likely that this trend will have a positive influence on productivity growth because the increase should be primarily in the central age groups. Also, as entrance barriers continue to be reduced, and as females become more experienced, the proportion of women entering semiskilled, skilled and professional occupations is expected to increase (Mark, 1979).

Elderly

Another special group which is beginning to receive more attention is older workers. Older workers are now given more opportunity to work than they were in the recent past. For many, the mandatory retirement age has been raised from 65 to 70. Recent changes in the Social Security System allow benefit recipients to earn more without being subjected to a 50 percent benefit offset (Weber, 1979). Although there is a tendency for earlier retirement for some workers, continued inflation will likely cause more workers to take advantage of opportunities to work longer.

Productivity of older workers depends to a great extent on the type of employment and the degree to which their special needs are met. General characteristics of older workers that affect productivity can be categorized as: physical, economic and social-psychological (Work in America Institute, 1978). There is evidence that physical functions deteriorate with age, but, the effect of deterioration on productivity is still

unclear (Laufer, 1971). Evidence suggests that the output of older workers is generally more stable and that their overall productivity rate compares favorably with younger workers (Barkin, 1970; Brennan, 1974). Yet, declining physical capabilities may affect the productivity of workers in physically strenuous jobs.

One of the key economic problems of older workers is unemployment. Once older workers become unemployed, for any reason, they remain unemployed longer than younger workers (Odell, 1970; Turner, 1973). Factors inhibiting re-employment of older workers include: unfavorable employer attitudes, lack of mobility, and cost of benefits and salaries (Adams, 1969; Odell, 1970).

Older workers often suffer psychological tensions which affect employment and productivity. Psychological pressures relate to the decreasing probability of promotion as one climbs the ladder, accepting personal limitations, stress in family relationships, the shifting of managerial opportunities and interests to younger people and the resulting loss of motivation (Constande, 1972; Hockenberry, 1971). Litwin (1970) suggested that the occupational problems of older workers, including problems of employment, retraining, occupational upgrading, enthusiasm and interests, are essentially due to a loss of motivation that begins around age 40.

Special Subpopulations

Handicapped

One special population which is receiving considerable attention, particularly in vocational education, is handicapped and/or developmentally disabled. According to Jamero (1979) one out of every five Americans

outside of institutional settings is disabled. Because only 40 percent of the disabled are working in competitive employment, many at the lowest skill level, the productivity of this population is low.

Numerous factors hinder entrance of developmentally disabled persons to the labor force. Martin (1980) summarized these as: (a) The attitude and behaviors of developmentally disabled individuals often creates barriers. Many developmentally disabled individuals do not possess a work ethic and have differentiated social roles. (b) Employer and co-worker attitudes are often based on what developmentally disabled individuals cannot do rather than on what they can do. (c) A large percentage of their employment is in the secondary labor market, where pay is at subsistence levels, other benefits are almost nonexistent, and ineligibility for public support results. (d) The present vocational training system too often does not provide appropriate vocational and independent living programs.

Although the forces working against the integration of handicapped persons often appear stronger than the forces encouraging community integration, there is cautious optimism that the next decade will witness quality, integrated services which will assume that handicapped persons become contributing, productive members of society (Rusch, 1980). Literature concerning the work productivity of handicapped individuals has demonstrated that the productivity of many handicapped individuals can equal non-disabled workers (Jamero, 1979; Lynch, 1979). Factors which may encourage integration of handicapped individuals into the work force and improve productivity include: enforcement of legal rights of handicapped individuals, financial incentives for employers who hire the disabled, and intensive vocational training programs (Martin, 1980).

Economically Disadvantaged

The Education Amendments of 1976, Title II, Vocational Education identified the disadvantaged as a target population for vocational education programs. Disadvantaged persons include those who have academic, socio-economic, and cultural handicaps, or handicaps other than physical or mental, which prevent them from succeeding in regular vocational education programs. Economically disadvantaged persons often suffer unemployment and underemployment which in turn affects their productivity.

Individuals who are considered economically disadvantaged are very often persons with poor educational backgrounds, semiskilled or unskilled workers receiving less than poverty level incomes, members of ethnic minority groups which have been discriminated against, or persons who lack motivation for obtaining an education or a job skill because of a combination of environmental, cultural, and historical factors (Kay, 1973). Productivity of this group is generally low because of lack of job skills or work experience and because of high unemployment or employment in less productive jobs. Low educational attainment is often perpetuated by economic conditions because students often need to drop out of school in order to earn money.

Limited English Speaking

The subpopulation of limited English speaking consists of people who are of natural origin minority who do not speak or understand the English language in an instructional setting well enough to benefit from vocational studies to the same extent as a student whose primary language is English (Bilingual Education Service Center, 1979). The U.S. Bureau of the Census figures for 1976 indicated that there are 22 million persons in

the nation whose native language is other than English. Statistics show that such individuals tend to be educationally and economically disadvantaged (Hurwitz, 1980).

The makeup of the limited English speaking population includes native Americans who often speak their own tribal languages, the Eskimo population, Mexican Americans, Puerto Ricans, and immigrants from such places as Russia, Cuba and Southeast Asia. The native Spanish speaking people comprise the largest proportion of the limited English speaking population. This group also represents a higher percentage of the school age population than their percentage in the general population. This high percentage of young people has created additional problems for native Spanish speaking youth in entering the labor market.

The limited English speaking have a disproportionate share of unemployment in the United States, e.g. 10.6 percent for native Spanish speaking, creating high incidences of poverty (Hurwitz, 1980). Barriers to employment have been related to lack of educational attainment, lack of useable work experience and lack of available jobs. The lower level of educational attainment is attributed to high dropout rates, cultural factors, language barriers, economic reasons and lack of career education to assist in the transition from school to work (Cardenas, 1980).

Increased Educational Attainment

One of the principal changes in the qualitative dimensions of the labor force during the past fifteen years has been increased educational attainment (Freeman, 1979). During the 1960s there was a tremendous increase of persons entering college. The number of baccalaureate degrees granted doubled during the period between 1966-1974 (U.S. Department of Health, Education and Welfare, 1977). The average number of years of formal education for the current labor force is twelve and a half (Kerr, 1979).

The educational background of a worker affects the type of work performed and the proficiency with which it is done. Therefore, changes in the average educational level of the workforce can affect productivity (Mark, 1979). Numerous attempts have been made to assess the impact of higher educational levels on productivity. Earnings differentials are usually used to reflect productivity differences. Most studies have found that education has strong positive effects (Kerr, 1979; Denison, 1977).

It is expected that the average educational level will continue to rise, primarily as a result of fewer workers with less than a high school education and more workers with some post-secondary education (Katzell, 1979). The proportion of youth going to college is likely to increase, as the "shortage" of young people entering the labor force will create favorable conditions for graduates (Freeman, 1979). Whether continued increases in educational level will further aid productivity growth is not clear. It may have negative effects (Mark, 1979). Many authors have suggested that excess credentialism results in lower productivity.

There are some indications that there is already a decline in the contribution of increased educational level to productivity growth. College graduates are having greater difficulty obtaining positions which are related to their schooling. This problem is likely to become worse as the proportion of prime-age educated workers increases and creates fierce competition for managerial and technical positions. Educated workers place more emphasis on "good" jobs which use their abilities and have greater dissatisfaction with under-utilization and lack of challenge (Katzell, 1979; Mark, 1979; Freeman, 1979). If these workers are unable to find satisfying jobs, frustration and dissatisfaction are likely to occur and lead to decreases in productivity (Yankelovich, 1979). The effects of educational

level on productivity growth in the future are, therefore, uncertain. It depends, in part, on the level of efforts to create satisfying jobs for educated workers.

Over half of the labor force now finishes high school and goes to college for at least one half of a year. It is predicted that this ratio will increase. Kerr (1979) indicated that 60 percent of college students are taking professional and technology oriented majors now versus 40 percent a decade ago. There is also an indication that workers with some post-secondary education are among the most dissatisfied, since their lack of a college degree often bars them from the most challenging occupations they desire (Katzell, 1979).

Changing Values and Expectations of Workers

There is evidence that workers' values and expectations of work changed during the past decade (Kerr, 1979; Yankelovich, 1979). Changes first appeared during the 1960s with the emergence of students' and womens' movements. However, it was not until the 1970s that new values became more widely accepted. While social values have changed rapidly, the workplace has been slow to change. Disharmony between social values and work often creates dissatisfaction among workers which, in turn, may affect productivity.

Yankelovich (1979) suggested that the "new breed" has become more concerned with self-fulfillment and that success in the workplace is not enough to satisfy their yearnings for self-fulfillment. He stated that the new breed speaks vaguely about "fulfilling their potential," of the need to "keep on growing" psychologically and of having a "duty to themselves" and that this vagueness has created confusion about goals related to success. In the past, Americans' goals have been to produce more goods

and services and to obtain a higher standard of living. Etzioni (1979) cited two Harris polls taken during the 1970s which indicated that only 17 percent of a national sample desired a higher standard of living while 79 percent favored teaching people to get along with the basic essentials. Only 22 percent endorsed the search for bigger and better things while 66 percent favored more humanized living.

The changing values of workers has led to different expectations of work. Kerr (1979) summarized these expectations:

More people want 'good' jobs, and there is an increasing rejection of "bad" jobs i.e., jobs in which the employee has few, if any, fringe benefits and is not covered by formal or informal seniority rules, routine factory or office jobs; and 'dirty' work. The definition of a 'good' job comes more and more to include some individual and small group choices about its terms and conduct, sometimes even over and beyond collective bargaining. (p. xi)

As indicated, a good job not only relates to the work itself, but also to work conditions. Workers are increasingly more concerned with the opportunity to participate in decision making, the right to dissent, more checks and balances on the exercise of authority, better benefits, and a more open and interactive workplace environment that resembles their values and life-styles in other areas (Rosow, 1979; Kerr, 1979).

The effects of changing values and expectations on productivity are complex. Workers with traditional values are generally motivated to be productive when employers use the carrot-and-stick approach - the carrot being money and success, the stick being the threat of economic insecurity (Yankelovich, 1979). Yet, this incentive approach does not satisfy all the needs of workers under the new value system. Frustration of needs may lead to decreases in productivity. Yankelovich (1979) discussed three flaws in the carrot-and-stick incentive approach. First, the system is

uniform where it should be diverse because individual differences are becoming more prominent and accepted in the workforce. Second, the incentive system relies too heavily on economics while values other than money are becoming more important to workers. Third, quality-of-life motivations are not well understood by employers, particularly in relation to their requirements for efficiency and productivity. It appears that trends in job satisfaction will depend on how the world of work adapts to the diverse needs and demands of the new breed of workers (Katzell, 1979).

The values of the young generation may affect productivity partly because there appears to be less commitment to the production of more goods and partly because of the dissatisfaction resulting from the disharmony between many workers' expectations and the existing work structure. Youth can be taught about the effect which productivity has on the economy so that workers do not view productivity as a management function solely. Much of the productivity growth in Japan can be traced to a work force that is itself interested in finding and initiating new ways to improve productivity.

Implications for Vocational Education

An examination of the changing characteristics and composition of the labor force can enable vocational educators to identify target populations for programs designed to increase worker productivity. Individuals within the subpopulations described in this chapter are often unemployed or employed in less productive jobs because of lack of experience or lack of skills needed for employment in more productive occupations. Vocational education can provide training and opportunities for work experience which

may enable these individuals to obtain jobs or to enter more productive occupations, thereby increasing individual productivity.

Although the percentage of youth in the labor force will decrease in the coming decades, it is safe to assume that there will remain a need for education and training programs for youth. Vocational education has the opportunity not only to provide young workers with skills which will help them perform better, especially those required in the service sector, but also to assist them in obtaining work experience before entering the paid labor force after high school graduation.

Many vocational education courses are designed to combine education and work experiences within the school setting, e.g., a food service class which prepares school lunches or an automotive class which repairs school vehicles. An alternative to in-school work experience is cooperative vocational education wherein students work for pay in competitive employment. Although many students participate in such programs, the time and cost involved in supervising students on-the-job and the number of employers willing to participate are limiting factors. Expansion of such programs would provide more opportunities for youth to gain experience in the world of work. Greatly increasing such programs would require stronger linkages among education, commerce and industry, and labor. Vocational educators might continue to help employers recognize long-term benefits, (i.e., more productive employees) of helping students gain experience. Job seeking skills will also enable students to make better initial contacts with business and industry.

In the next decade, the largest proportion of workers will be in the prime-age category. They will compete for promotions and managerial positions. It is predicted that many workers will become dissatisfied and

may change career directions. Retraining programs directed at 25-44 year old workers, could assist them in making career changes. Because this age worker cannot generally afford either the time or cost of dropping out of the labor force to re-enter school, flexible training programs should be established to accomodate this group. Retraining programs within individual firms, designed to meet specified worker needs, is one example.

One means of providing a service to the subpopulation of females, is to actively recruit females to programs which lead to more productive occupations. Recently, a great many programs have been opened to women. There is evidence that more women are entering non-traditional occupations. Yet, many schools do not actively recruit females to traditionally male programs. Preparing females for non-traditional occupations and encouraging enrollment in programs designed for women who wish to re-enter the labor force may help females become more productive. As indicated earlier, women may be inhibited by societal pressures. To overcome these pressures, career education and guidance through vocational education is needed.

The separation of occupational and family life, which may create stress within the family, has also been identified as a possible causal factor in the lower productivity of women (Attwood, 1980). The implications for vocational education are particularly evident in the area of home economics. Preparing students to become quality child care workers can have an indirect impact on productivity. If quality child care facilities are available, people may be more likely to continue their employment with less absenteeism. More continuity in their employment would enable workers to move into higher, more productive positions. Home economics can also educate both men and women in basic living skills, helping to

eliminate some of the role strain placed on working wives and mothers. Family stress can affect a worker's attitude, motivation and productivity on the job. Improving skills in family communication, budgeting, child care, time-management and meal preparation, could lead to a better functioning family and less stress on the working female and male.

Older workers will be a prime source of labor in the future. By planning programs and services for the older worker, vocational education can help them to continue to be productive. The Work in America Institute (1978) suggested that the older worker who is having trouble being as productive as younger workers has three options: Job redesign, pursuing a second career, or retraining. The first, job redesign suggests that many jobs could be redesigned to fit the capabilities of older workers so that the job would fit the person rather than vice versa (Odell, 1970). The second and third options concerning changing careers and retraining, have direct implications for vocational education. Mid-career is often a time when workers reach their limitations or are restricted from growing, and lose motivation. Development of a second career, retraining, achievement-motivation programs, and career counseling are suggestions which have been made to assist these persons to remain actively involved in their work (Litwin, 1970; Odell, 1970).

Vocational education has the opportunity to provide retraining for workers either in a school setting such as community colleges, or within the work organization itself. Again, strong linkage between education and commerce and industry is necessary to identify areas for retraining and to develop programs which appeal to older workers in terms of time and style. Learning experiences designed specifically for older workers, which provide a support group for counseling, career awareness and achievement

motivation, can also be offered. Providing young people with general skill training is another means of helping workers to become more flexible and able to adapt to career changes as they become older.

Vocational education can also impact on productivity by developing improved programs for handicapped and developmentally disabled individuals. To develop appropriate training programs stronger linkages between vocational and special education need to be developed. Short term, intensive training programs need to be designed to teach vocational and independent living skills (Martin, 1980). Because only 40 percent are currently employed, teaching technical skills to enable handicapped persons to obtain a job will improve the productivity of this subpopulation. Social skills also need to be taught in order to reduce co-worker tension which can affect the productivity of the handicapped worker on the job. Vocational education is making a great deal of progress in development of training programs for the handicapped and should continue to place emphasis on such programs.

Vocational education is in a position to assist in the process of reducing the barriers to employment for the limited English speaking. According to the Education Amendments of 1976, P.L. 94-142, a significant problem in this country involves:

millions of citizens, both children and adults, whose efforts to profit from vocational training are severely restricted by their limited English-speaking ability because they come from environments where the dominant language is other than English; [the fact] that such persons are therefore unable to help to fill the critical need for more and better trained personnel in vital occupational categories; and that such persons are unable to make their maximum contribution to the Nation's economy and must, in fact, suffer the hardships of unemployment or underemployment. (P.L. 94-482, Part B, Subpart 3, Section 181).

The Comprehensive Employment and Training Act of 1973 was the first legislation to identify persons with limited English speaking ability as a target group. In 1976 the Education Amendments, Title II, Vocational Education provided funds and a framework for states and individual programs to serve those with limited English speaking ability. Therefore, a framework is available for ways in which vocational education can assist the limited English speaking in learning necessary job related skills and in obtaining jobs, which in turn will help these workers to increase their productivity.

In a bilingual vocational education program, both English and the student's native language are used to teach vocational skills needed to enter an occupation. Students receive vocational instruction in their native language, whenever necessary, to assist in the mastering of difficult vocational concepts. Instructors center the English instruction on vocational concepts and vocabulary that students need to know on the job. The purpose of vocational training is to provide limited English students with useful vocational skills and adequate English language skills so they can understand English well enough to compete successfully in the job market.

Bilingual vocational education programs can help to eliminate some employment barriers by helping the limited English speaking to obtain the skills and language needed for employment and thereby increase their productivity. Continued training may also assist them in moving into more productive occupations. Bilingual programs can also provide career education to help students become aware of occupational opportunities.

Assisting economically disadvantaged persons to obtain job skills and employment, may result in increased individual productivity. One means of

accomplishing this is through cooperative efforts with CETA (Comprehensive Employment and Training Act). CETA is designed to provide job training and employment opportunities for the economically disadvantaged, unemployed and underemployed. By coordinating programs of jobs and training, and education, the economically disadvantaged individual can work for a private employer while attending an education or training program. This type of program provides the opportunity for the individual to obtain job skills without the need to dropout of training programs for economic reasons.

Vocational education must also continue to provide quality programs at the college level and work closely with other disciplines, as well as commerce and industry, to provide advanced career education and guidance. More work/education programs can be established at the college level so that students can gain experience, and more realistic expectations of work.

Summary

The labor force in the United States has undergone considerable change during the past decade. The changing composition of the labor force has affected productivity growth. The influx of youth, females and individuals from subpopulation groups such as the elderly, handicapped, economically disadvantaged and limited English, into less productive jobs has negatively affected productivity statistics. The emergence of different values and expectations of work has created some dissatisfaction among many workers of the present work structure, which may also negatively affect productivity. The future growth of the productivity rate depends, in part, on the ability of society to adapt to the changing needs of workers and its capacity to train workers with the characteristics necessary to meet the changing needs of the production and distribution processes.

Examination of the changing composition of the labor force and the changing educational level and values of workers can lead to numerous implications for vocational education. By identifying "who" the workers of the present and future are, vocational educators can adapt curricula to the needs of special populations in the labor force, thereby assisting in the preparation of more satisfied and productive workers. The productive participation of the total labor force is central to the revitalization of the economy.

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III

INCREASING PRODUCTIVITY THROUGH DIFFERENT
TYPES OF VOCATIONAL EDUCATION AND TRAINING PROGRAMS

Introduction

The most apparent, and certainly most direct, way vocational education can impact upon the productivity of the workforce is through delivery of relevant and effective education and training programs. Increasing awareness of the crucial roles education and training play in economic development is evidenced in a report by the Joint Economic Committee of Congress (1979):

In our view, it is possible to enhance dramatically our potential GNP growth prospects in the coming decade with a carefully designed program aimed at promoting capital spending and upgrading worker skills (emphasis supplied). Not only would such an approach raise productivity growth, and therefore our GNP potential, but it would also bring about further improvements in the areas of inflation, employment, and our balance of payments (p.64).

To the extent that youth and adults experience vocational education and training programs which are relevant and effective, productivity of the workforce may be increased. The distinction between vocational education and vocational training, although somewhat artificial when the amount of overlap is considered, may be important when determining potential effects on productivity growth.

Vocational education as defined by Evans and Herr (1978) in the broadest sense, is "that part of education which makes an individual more employable in one group of occupations than in another" (p.3). They also offered three basic objectives of any public school vocational education curriculum: (a) to meet society's needs for trained workers, (b) to increase options available to each student, and (c) to serve as a motivating force to enhance all types of learning. To the extent that these objectives are met, especially the second and third, vocational education may have its greatest impact on the productivity of the workforce over the long-term.

Secondary school vocational education programs may impact most on future productivity by raising academic achievement of certain students and helping to introduce realities of the work world to youth. Those who do well in school generally do well in employment. For the most part, the same skills and attitudes lead to success in both. Vocational education which imparts work values, work habits, and understanding of employer-employee relationships, and a basic preparation for clusters of occupations may have a long-term and future impact on the productivity of the workforce.

As defined by Lessinger (1980), training is the process of deliberately passing on to others knowledge and skills which have been mastered so that they can be demonstrated in a required setting. Like the first objective for vocational education offered by Evans and Herr (to meet society's needs for trained workers), the effect of vocational training on the productivity of the workforce, may be more immediate and short-term than that of vocational education. Vocational training which is designed to pass along to others specific knowledge and occupational skills, whether for job entry or for upgrading, is likely to have an immediate impact on

the productivity of the workforce. However, because its focus is usually somewhat narrow and skills are increasingly short-lived, the impact of vocational training on productivity may be short-term. Vocational training which provides immediate, although short-term, impact is not only desirable but necessary for increased productivity and continued economic development.

Training is addressed most systematically and intensively in times of crises. World Wars I and II, for example, served as the impetus for massive training efforts in this nation designed to spur the production of essential products. Current crises in the American economy and the ensuing efforts at economic development and revitalization may call for more systematic vocational training. Vocational education and training, by whatever definition or however differentiated, must be identified as having a significant role in increasing both the short-term and long-term productivity of the workforce.

The remainder of this chapter describes three very different types of vocational education and training which can impact on the productivity of the workforce. First, vocational training for occupational skill development is discussed. Second, the importance of vocational education in general work skill development is presented. Finally, vocational education designed to change and/or develop positive attitudes toward work is discussed.

Occupational Skill Development

The traditional role of vocational education as occupational training is defined in the 1976 Education Amendments, Part II as ". . . vocational training or retraining which is of high quality (and) which is realistic in the light of actual or anticipated opportunities for gainful employment." In

other words, vocational education should prepare students for gainful employment in jobs which exist or are likely to exist when they complete their training. In recent years primary emphasis of vocational education has been on students and how to train them.

Many economists and vocational educators agree that productivity of labor can be increased by improving the skill level of the labor force. Paul (1980) stated the case simply:

When half the increase in output is attributed to labor and technology, it is quite reasonable to assume that improved labor and technology inputs should improve output proportionately by making the marginal worker, or the unemployed who may be a marginal worker when employed again, better skilled at a job. A significant increase in productivity rates can be achieved by training. This has been done in some European countries and Japan. There is no reason why it cannot be done here (p.32).

Evans (1981) described three types of vocational education for occupational skill development: (a) job specific training, (b) occupational specific education, and (c) occupational area preparation. Job specific training is designed to prepare people for a particular job with a particular employer. While most vocational training of this type is conducted by individual firms in the private sector, public school job specific training has become more popular in many states as a counterpart to economic development programs designed to attract new industries and in some cases to retain existing industries.

Job specific training is most likely to have an immediate and relatively short-term impact on the productivity of a limited number of workers for a limited number of firms. For the most part, job specific vocational training may be best suited for upgrading workers' skills as a component part of a state or local community economic development program. Clearly, job specific vocational training can increase productivity rates but is not suited to the majority of secondary school age youth who are preparing for entry-level positions.

Occupational specific vocational education prepares people for employment in a certain occupational area but not necessarily for a particular employer. Examples of occupational specific vocational education include programs to prepare welders, bookkeepers, cosmetologists, or wildlife conservationists (Evans, 1981). If jobs are available and if the training is sufficiently relevant to the specific needs of employers, effects on productivity should be much the same as with job specific training.

However, Craig (1980) indicated that the private sector training industry has arisen because many employee education and training needs have not been met by the traditional educational system. Even when students have been prepared for entry into specific occupations, orientation and retraining or additional training must be provided to accommodate differences among firms. To the extent that local advisory groups are utilized to advise regarding content of specific occupational programs, and to the extent that advice is utilized, much of the need for additional training or retraining can be avoided. From an increased productivity point of view alone, it might make most sense to revise all occupational specific vocational education programs into job specific training programs. However, factors such as individual student preferences and increased geographic mobility make this notion less desirable.

Occupational area preparation is designed to prepare people for grouping or clusters of occupations which require similar knowledges and skills, tools and methods or materials. Examples of vocational education for occupational area preparation include programs to prepare workers for office occupations, medical careers, horticulture, building trades, and homemaking (Evans, 1981).

It follows from the above that the effects of vocational education for occupational area preparation on productivity rates may be even less immediate than either occupational specific vocational education or job specific vocational training. In most instances, the more generic scope of occupational area preparation necessitates, more orientation, additional training and/or retraining for specific jobs. On the other hand, it is precisely, the more generic scope of occupational area preparation which offers greater long-term and future impact on increasing productivity rates. To the extent that people are prepared adequately for a cluster of occupations, shorter and less intensive periods of job specific training may be necessary for upgrading workers' skills to meet future labor requirements and skill needs.

Thus, decisions regarding what type of occupational skill development to deliver to increase productivity rates involve understanding the trade-off between the short-term, but more immediate impact fostered by job specific vocational training, the less immediate, but more long-term, impact of occupational specific vocational education, and the even less immediate, but even more long-term, impact of occupational area preparation. Fortunately, decisions do not have to be unilateral. Vocational education for occupational skill development can be provided to meet the needs and wants of various participants. The immediate needs of employers for skilled and more productive workers can be satisfied through job specific vocational training primarily targeted for adults. Vocational education for occupational specific, and to a greater extent, occupational area preparation, targeted primarily for secondary youth, can help to insure a productive workforce in the future.

General Work Skill Development

Modern technology has posed a problem for vocational education. Skill requirements for vocational and technical occupations have changed and will continue to change dramatically. Many specific occupations will become obsolete in the foreseeable future. Very few students, or even present workers, can look forward to a lifetime career in an occupation wherein specific job skills and knowledge requirements will remain unchanged. Accelerating technological changes affect specific job skill requirements in unpredicted ways. Skills which are applicable to a wide range of occupations and careers appear to be needed by workers attempting to obtain or maintain satisfying and productive jobs.

During the past several years the call for moving back to the basics has sounded throughout the educational system. Employers have pointed to the inability of many young people to perform satisfactorily at work as an indicator that students are not learning the basic skills. Skills which are sufficiently generic to be valued by employers in nearly all work settings are included in this discussion as vocational education for general work skill development. There appears to be some general agreement among educators and employers regarding what skills are basic to successful employment. Increased emphases on vocational education for general work skill development may be necessary to help assure that adequate productivity standards are achieved. Johnson (1981) stated that vocational educators must accept basic education skills which relate to a career as part of their responsibility.

Ginzberg (1977) argued that everyone needs to learn how "to read, to write, and to account" and submitted that basic skills are still required for a person to be successful in our economy:

I am not arguing that there is room for only one kind of curriculum at the secondary school level. That is ridiculous. But, I am arguing that communications, arithmetic, and analytic skills are still the crucial skills for work (p.24).

Similarly, Wirtz (1977) spoke out strongly against the old arguments of traditional liberal arts versus vocational education and called for a better mix for everyone.

Wilms (1974) found growing evidence that in the future getting a job will depend more on a student's general abilities than on occupational skills. He argued that employers want employees who are not narrowly trained, but who can read, write, compute, solve problems and adequately express themselves to their co-workers and customers.

Grasso and Shea (1979) concluded that adequate information on the relationship of basic skills achievement and vocational education is needed but not now available. They stated that "vocational programs may have both a positive influence, through demonstrating the real world applicability of academic subjects, and a negative influence, by virtue of less time spent directly on the development of basic skills" (p.103).

Whereas much of the employee education effort conducted by private industry is undoubtedly job or organization specific, according to Craig (1980), a significant share of the education and training content is probably sufficiently generic that it could or should be done by the traditional educational system. Employers invest heavily in development of employee skills such as decision making, interpersonal relations, and communications skills. He stated "there appears to be a large market potential for the educational community in developing generic skills of the workforce and being responsive to employers' educational needs" (p.17).

When attempting to define basic skills, Leach (1980) indicated that we

need to go beyond reading, writing, and arithmetic and include as part of everyone's basic education an understanding and acquisition of skills which center on the human aspects of work. These include skills in interpersonal relations, problem solving and decision making, communicating effectively, recognizing and understanding authority and responsibility, coping with conflict and change, and adapting to and planning for the future. He concluded:

It seems apparent to me that teaching "technical" occupational skills, although an important and necessary component of vocational education programs, should not represent the basics in vocational education curricula. Students, I think, need to learn skills that have been valued in the workplace in the past, are valued now, and will probably continue to be valued in the future. This type of basic vocational education will be applicable to the changing requirements of the work world. Learning skills that relate to the "human aspects" of work will, I believe, allow people not only to enter the workplace but also to maintain themselves as productive, satisfied workers throughout a changing occupational life. Workers who possess skills such as those described above do not become automatons, but rather find their options in the work world increased (p.15).

Chiti (1980) identified five reasons given by Illinois cooperative vocational education teacher-coordinators for not teaching skills involving the human aspects of work. First, many teachers did not feel qualified to teach these kinds of skills and indicated they need more training to do so. Second, many teachers indicated a lack of available curriculum materials for teaching these skills. Third, many vocational teachers believed that these skills are taught elsewhere, e.g., in academic classes or home. Fourth, many vocational teachers thought teaching these skills is someone else's job. And fifth, most vocational teachers indicated that they do not have time to teach these skills as well as technical occupational skills.

Relationships between productivity and vocational education for general work skill development may be most directly seen in terms of cost

and time devoted to retraining. Dunham (1980) indicated that many employers do not want students with narrow skills. They prefer that students have strong basic educations and will train them regarding specifics. He further stated that "Given a broad vocational education, a person whose job ends or who encounters technology change ought to be able to move into a related field and perform well. Retraining is expensive. Upgrading is less expensive and takes less time" (p.68). Nelson (1979) stated that young workers may spend much time early in their careers becoming knowledgeable about "human" skills necessary for success at work through trial and error which is a waste of valuable time on the job and may lead to inefficiency on the part of individual employees.

Evans (1980) made a distinction between education for work and education about work. While education for work tends to concentrate on specific occupational skill development, one form of education about work concentrates on developing skills and knowledge needed in all work. "We are just beginning to recognize the importance of this type of education and have not yet developed satisfactory ways of planning and teaching it" (p.60).

Providing only vocational education for general work skill development will not solve productivity problems. However, it is estimated that 30 percent or more of the students in vocational education programs enroll with a basic skill level inadequate to complete a vocational education program and enter employment (Bottoms, 1981). This estimate, already alarmingly high, defines basic skill levels narrowly. If the general work skills included in the preceeding discussion were to be included, the estimate would undoubtedly be higher. The American Vocational Association legislative study teams proposed to Congress the need for a national

improvement program with an emphasis on helping to model efforts which will enable vocational education to be more effective in responding to national priorities such as economic development and productivity. Emphasizing vocational education for general work skill development may be instrumental in raising the productive capacity of a large number of vocational education students.

Development of Positive Attitudes Toward Work

The word attitude has come to mean various things to different people. Kahn and Weiss (1973) provided an integration of the various definitions of attitude:

Despite the many ways in which attitudes are defined, the commonality among the various definitions is illustrated by noting that attitudes are selectively acquired and integrated through learning and experiences; that they are enduring dispositions indicating response consistency; and that positive or negative affect toward a social or psychological object represents the salient characteristic of an attitude (p.761).

From a practical viewpoint, attitudes can be termed as states of mind or feelings toward something. Thus, attitudes toward work, may be termed as states of mind or feelings held by individuals concerning the role of work in a society and in their everyday lives (Leach, 1978). Attitudes toward work include how important a person's work is to self, what a person wants, needs, or expects from a job and how strongly a person likes or dislikes a job (Katzell, 1979). An individual's attitude toward the meaning and value of work is an important factor in successful adjustment to work. It may also affect satisfaction with work and productivity.

Vocational education can play an important role in helping students develop positive attitudes toward work, and can thereby increase job

satisfaction and oftentimes productivity. Contemporary emphases upon career education and career development suggest that individuals formulate and develop attitudes toward work during their early years in the home and school and that these are critical to later successful performance on the job. Kazanas, Gregor, and Hannah (1974) submitted that the career education movement was based upon the idea that students must be given the opportunity to develop positive attitudes toward work within a chosen career. Vocational education can provide these opportunities through classroom and work experiences.

Identifying factors which affect workers' attitudes is complex. All individuals do not have the same attitudes toward work. Each individual has numerous attitudes pertaining to his or her work. Katzell (1979) has identified three classes of attitudes about work which are somewhat but not completely separable: job involvement, work values, and job satisfaction.

Job involvement refers to the importance of a job to the person, or whether the person wants to work at all. Traditionally a person's work role has been central to his or her life. Yet, with changes in the structure of work through technology, shortened work weeks, collective bargaining, etc., the focus of life is subject to change. Hence, a worker's attitudes may also change. The importance of a job varies widely among individuals. Some people feel that it is all important, while others have a total disenchantment with the work scene. These vast extremes are due to personal characteristics and the work situation itself. Katzell (1979) indicated that the person to whom work is more important is most likely to occupy a job which is regarded as stimulating and enriching and affords the worker opportunities for participation in decisions. Personal character-

istics of the more involved workers include being older, having a sense of personal responsibility and subscribing to the hard-work ethic.

Work values refer to what workers expect of their jobs. Factors which affect work values include, but are not limited to, wages, goals, interest, challenge, relations with co-workers, and feelings of accomplishment. Work values are also influenced by characteristics such as family background, educational level, affluence, sex, age, and race (Yankelovich, 1977).

Job satisfaction, or how much workers like or dislike jobs depends on the discrepancy between individuals' expectations regarding jobs and what jobs deliver. National surveys conducted between the period of 1958 and 1977 indicated that job satisfaction for all workers has ranged from 81 to 92 percent (Katzell, 1979). These percentages have remained rather constant. But, a change can be observed when certain segments of the population are examined. For example, the National Opinion Research Center indicated there was a greater decline in job satisfaction among blue-collar than white collar workers during the period 1973 to 1977. Also, satisfaction with certain aspects of work may be increasing, while dissatisfaction with other aspects may also be increasing. Because such effects cancel each other overall averages may be unchanged.

Relationships between job satisfaction and job performance or productivity are complex. From a logical viewpoint, most managers believe that high job satisfaction leads to greater productivity (Katzell, 1975). Research has shown that, to some extent each causes the other. But, each also is affected by other factors. Increased productivity is often seen as a by-product of programs designed to increase job satisfaction (Work in America Institute, 1978).

Attitudes of individuals toward work are constantly changing. Recently, much has been written regarding attitudes of the "new breed" of workers. Yankelovich (1979) described the "new breed" as workers who take the traditional definition of a good job -- steady work, good pay, comfortable and safe conditions -- for granted. They desire jobs which offer freedom, interesting and challenging work and a voice in decision making. These attitudes can have positive influences if the workplace keeps pace with changes in attitudes. Examples include: redesigning jobs so workers are challenged and can see the consequences of what they do, increasing the flexibility of work schedules and offering sabbatical leaves so workers can return to school, creating new careers in areas of heightened public concern, creating better mechanisms for sharing power up and down the line, and increasing flexibility of career structures. Attitudes which may have a negative influence on the workplace, often arise because workers do not know what to expect from work and are disappointed or frustrated. Development of realistic expectations and positive attitudes toward work begins early in life and can be greatly influenced during school years.

As a link between education and work, vocational education has the opportunity to improve communication. On one hand, vocational educators can keep business and industry informed about changing attitudes and expectations of youth so that appropriate changes can be made in the workplace. On the other hand, vocational educators need to be aware of changes which have occurred in the workplace to help students develop realistic expectations. If students know what to expect and understand what type of work will meet their needs, they are more likely to be satisfied with a job and in turn may be more productive.

Helping students develop positive attitudes toward work, may have a more direct impact on productivity. Many recommendations have been made for educators to teach work attitudes. Osipow (1972) supported the development of programs to help people develop attitudes enabling them to make better decisions concerning work. He stated that "general attitudes toward work itself can be elicited, shaped, refined and internalized, all of which will permit the individual to potentially deal more effectively with the vocational development tasks at the time when these become more inconsistent and overt" (p.16). Vocational education has the opportunity to develop these programs and implement them in vocational education courses. Because attitudes are developed and changed through experiences, both personal and those of others, programs designed to teach attitudes should focus on positive experiences. Vocational education can provide work experiences for students through cooperative education programs. Actual work experience can help students develop realistic expectations of work. In the classroom, experiences can be provided by utilizing outside speakers, simulation, case studies and sharing of experiences in discussions.

Summary

Vocational education is not just one type of curriculum for one type of student. An understanding of the different types of vocational education and their different purposes is needed by decision-makers, policy makers, and program planners at all levels. If vocational education is to play an effective role in the revitalization of the American economy, its leaders must be more aware of what its various forms can do.

To increase the productive capacity of an individual, vocational

education must start with an individual's current needs. Starting points will certainly be different for various participants in vocational education and training programs. Vocational education programs designed to deliver job specific training or occupational specific preparation will be only marginally effective if participants have an equally urgent need for basic work skill development. On the other hand, delivering vocational education for general work skill development to adult workers who need only specific job training or upgrading would be counterproductive.

To impact substantially on productivity, vocational education must overcome a basic misconception. Although the effectiveness of vocational education is usually measured and evaluated in terms of aggregate totals, different types of vocational education are designed to meet the needs of various participants. Increasing an individual participant's productive capacity depends, at least in part, on delivery of the appropriate type of vocational education. Offering a wide range of vocational education and training programs to meet specific needs may offer the greatest potential for increasing the productivity of the work force and enhancing overall economic development.

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IV

ADJUSTING ORGANIZATIONAL STRUCTURE
FOR INCREASED PRODUCTIVITY

Introduction

The organizational structure of a business enterprise affects how people work together to achieve the goals of the enterprise in the most effective manner (Sibson, 1976). The appropriateness of this structure can have an impact on employee productivity. An awkward organizational structure can inhibit effective and productive work of individuals or among groups of people. Although an appropriate organizational structure does not guarantee higher productivity, it can help to eliminate many barriers to productivity and provide a climate for more productive work. In many cases, an appropriate organizational structure, or improved quality of working life, can lead directly to an increase in job satisfaction. Increased productivity is often a by-product of job satisfaction. Although there appears to be a relationship between job satisfaction and improved productivity, it is less clear than the relationship between quality of working life and job satisfaction and not as well documented (Work in American Institute, 1978). In this chapter, various aspects of organizational structure are described and discussed in relation to productivity. The term organizational structure is used in a broad sense to include management structures, jobs, and employers' and employees' work schedules.

Adjusting the organizational structure as one means to increase employee productivity and job satisfaction has become increasingly common in the past decade (Katzell, 1975). Adjustments have included changes in

supervisory styles, methods of increasing employee participation, job redesign, and work schedules which allow employees to have more control over their work and personal time. The results of these changes in relation to productivity have been mixed. Some programs to adjust organizational structure have had a positive impact on productivity and job satisfaction while others have had little or no effect. Results of studies on such programs have indicated that there is no one organizational structure that is best for all situations. Rather, each enterprise must design a structure which fits its own needs, operating and economic characteristics, traditions, and working environment and facilitates and encourages effective use of human resources (Sibson, 1976). Because organizational structure must be individualized, it is important that both employers and employees understand available options and possible implications. Vocational education can play a vital role in this process by helping employers and employees become aware of alternative innovations in organizational structures. An understanding of options available may help students select a work environment in which they can be most productive. Experience gained through cooperative work/education programs may also help students be more aware of, and productive in, alternative organizational structures. Vocational education can also play an active role in providing technical assistance to help workers become more proficient at new jobs and decision making skills.

Management Structure

The management structure of a firm includes both the organization of personnel and the supervisory or leadership style of management utilized. Within a business, there is generally an established chain of command with identified job descriptions for employees, particularly managers. The

appropriateness and clarity of this organization and hierarchy of personnel can affect the productivity of employees (McBeth, 1974). On the one hand, if authority and responsibilities of individual members of management have not been identified clearly, there is a possibility of overlapping activities, opposing decisions or failure to make decisions, which may impede the effective use of workers. Explicit job descriptions are often helpful in effecting a smooth operation of many personnel functions (Hackman and Lee, 1979).

Yet, if the organizational system and job descriptions are too rigid and inflexible, they may block beneficial changes. For example, initiating a job redesign program may be impossible in systems where adherence to precise actions and work procedures are enforced. Therefore, the system of personnel organization which appears to be most directly related to higher productivity of employees is one that identifies clearly the authority and responsibility of all levels of management. Managers know what decisions they can make and for what group of employees they are responsible. Employers and managers also understand the appropriate chain of communication for problem solving and initiating change. Although the system should be well-defined, it needs to be flexible enough to be adaptable to changes or expansion within the organization.

Supervisory Style

The supervisory style of managers may also affect the productivity of employees. Bass, Forrow, Vallenzi and Solomon, (1975) identified five management or supervisory styles and their effects on productivity. A directive style is one where desired ends are obtained by means of the supervisor telling subordinates how to do something. Negotiative management is the process of using political means and bargaining to obtain

desired ends. A participative style allows managers and workers to share in the decision making process to achieve mutually agreed upon ends. A consultative supervisor is one who discusses problems with subordinates before making decisions. Delegative management allows subordinates to make their own decisions. Of these five categories, three were related to higher job performance of workers; participative, consultative, and delegative. Consultative management had the best overall relationship to worker attitudes and quality performance.

Wofford (1967) studied supervisory style and the affects on productivity by comparing job-centered supervisors with employee-centered supervisors. Results indicated that the leader who obtained the highest productivity and increased morale is employee centered. Characteristics of an employee-centered supervisor include communicating with subordinates, keeping them informed, showing a personal interest in them, being fair to all employees, being less punitive when mistakes are made and pulling for employees as well as the organization. The job-centered supervisor often applies unreasonable pressure, identifies with the organization over subordinates, punishes poor performance and is less sympathetic to an individual's problems. Galbraith (1967) found that the most significant variable influencing worker performance was the supportive behavior of supervisors. Aspects of supportive behavior included setting production goals, issuing less punishment, providing rewards and giving reinforcement.

The relationship between close supervision and productivity has also been examined. Ronan, Lathem and Kinne (1973) found that the highest production output resulted from setting production goals and then supervising closely to meet the goals. Contrary findings by Likert (1956) and

Patchen (1962) indicated that there is no relationship between close supervision and productivity. One possible explanation for this contradiction relates to the role of the supervisor with regard to worker performance. Two hypotheses concerning this relationship have been suggested. One is that the more unstructured the task, the more positive is the relationship between a leader and subordinates. The second is that the more structured the task, the more a positive relationship must come about through consideration on the part of the supervisor (Work in America, 1978).

Another possible relationship between supervision and productivity is between participative goal setting and the education level of the worker. Lattham and Yull (1975) found that educationally disadvantaged workers performed better when goals were assigned, while more educated workers performed about the same when they were assigned goals or told to do their best.

Findings of these studies and the motivation theories of Herzberg (1959) support the assumption that employee participation produces higher job performance and productivity. The concept of employee participation in decision making, goal setting, task assignment, and work scheduling has been widely adapted during the past decade. Employee participation can occur with varying degrees of involvement. It might involve representation on boards of directors, joint labor-management councils, collective bargaining, participative management, or programs such as management by objectives.

Participative management allows workers to have more control over their destinies by participating in decision making. Studies have shown that employees generally have higher morale and job performance when led by participative supervisors (Marrow, 1972).

Productivity was usually, although not always, higher for employees who had more control over their work environment.

Methods for Increasing Employee Participation

One of the ways in which workers have become involved in decision making and goal setting, is through "Management by Objectives" (MBO). MBO is a style of participative management that endeavors to plan its course for the future and to use these plans for continually reviewing its own efficiency (Katzell, 1975). MBO generally focuses attention on high-priority versus low-priority activities, inducing employees to be supportive of business objectives.

MBO may assist in increasing productivity by involving workers in decisions about work methods. Employee participation in decision making makes improvements more acceptable, reduces fear of failure, and increases employees' incentives to make the operation successful, and provides "stretch goals" with high levels of known expectations (Katzell, 1975; Sibson, 1976). Although the relationship appears logical, actual improvement of productivity through the use of MBO programs has not been well documented at this time.

Some other methods of increasing employee participation are the use of quality circles or quality of working life programs. Quality circles are designed to bring employees and immediate supervisors together to talk about work problems. Characteristics of quality of working life (QWL) programs vary from firm to firm. Generally, QWL programs focus on improving working conditions and not worker productivity. Yet, higher productivity is often a by-product of such programs. General Motors has one of the most elaborate QWL programs. The program consists of a million dollar training program, employee teams who have the power to hire and

fire, decision making brought to the factory floor, and employee participation in designing new factories. Regardless of what methods are used, the important factor appears to be management and employees talking together on the basis of quality (Chicago Tribune, 1980).

Collective bargaining is another means of obtaining employee input regarding management structure. Collective bargaining may deal with productivity specifically. This type of bargaining is defined as "the negotiation and implementation of formal collective agreements that stipulate certain changes in working rules in order to achieve greater productivity and ensure that labor receives its share of the resulting savings" (Industrial Relations Research Association, 1975). Productivity may also be dealt with indirectly through collective bargaining on issues such as compensation, work schedules, job descriptions, and working conditions.

Job Redesign

Job redesign, also called job enrichment, job enlargement or work redesign, attempts to design jobs to increase worker motivation and satisfaction. Job redesign is usually undertaken by management as an organizational change to improve productivity and decrease turnover and absenteeism (Katzell, 1975). There are numerous theories concerning relationships between job design and worker motivation. Two of the most commonly mentioned are those of Herzberg (1968) and Lawler, Hackman and Kaufman (1973). Herzberg (1968) proposed that jobs are motivation producing if they afford opportunities for greater responsibility, challenge and self-fulfillment. These factors, called "motivators," grow out of work itself, and are conducive to high job performance. Other factors, called "hygienes" are derived from the work setting and include company policies, pay plans, working conditions and supervisory practices. While

these factors do not create job satisfaction, their absence may cause dissatisfaction, resulting in lower job performance and productivity.

Lawler, Hackman and Kaufman (1973) theorized that four core dimensions of job design are essential to worker motivation. These are: (a) autonomy or self-direction, (b) diversity or variety, (c) wholeness or identity, and (d) feedback or knowledge of results. They suggest that when jobs are high in these four core dimensions, workers have the opportunity to find out that they have accomplished something meaningful and worthwhile, resulting in higher worker motivation, job satisfaction and job performance ratings.

Hackman and Lee (1979) discussed four reasons for using work redesign as a strategy for initiating organizational change. The first was that work redesign alters the basic relationship between the individual and what he or she does on the job. They suggested that many of the past attempts to solve motivational problems have failed because people have been selected, trained, and motivated within the confines of existing fixed jobs. Work redesign is based on the idea that the work itself may influence employee motivation, satisfaction, and productivity and provides a strategy away from external controls toward internal work motivation. The second reason, is that work redesign changes behavior directly. Rather than relying on workers to change their attitudes about work, work redesign incorporates a strategy to change the behavior of workers in a way that leads gradually to a more positive set of attitudes about work, the organization and the worker's self-image. The third reason for utilizing work redesign as a strategy for organizational change is that work redesign provides numerous opportunities for improving other aspects of the organization at the same time. As work redesign programs are imple-

mented, many problems will surface, providing the opportunity for employers and employees to examine and potentially solve many organizational issues which may result in increased productivity. The fourth reason is that work redesign can result in organizations which enhance rather than depress growth and learning of workers. Work redesign provides the opportunity for workers to regain the satisfaction of doing a difficult job well and to care about their work.

Based upon these and other theories, many business enterprises have implemented job redesign projects. Although there is no one set of criteria for redesigning jobs, common elements in job redesign projects have been identified. These include: changing job specifications to provide workers with more responsibility for planning, setting up and checking their own work, allowing workers to make more decisions about work methods and procedures, and making jobs, that have previously been segmented into small parts, the responsibility of individual workers (Hackman and Lee, 1978).

Job redesign programs have been promoted to increase job satisfaction and productivity. However, actual outcomes of such programs have varied. Hackman and Lee (1979) reported that a well-executed job redesign program can lead to improvement in the quality of work performed, and in the quality of employee work experiences and sometimes leads to an increase in the quantity of work performed. Katzell (1975) pointed to a lack of consistency in findings as to whether job satisfaction and productivity are improved by job redesign. Yet numerous factors have been identified which may affect the successful implementation of job redesign programs. Among these are training practices, including both technical training and

training in the decision-making process (Henrichs, 1976), career development practices (Van Maanem and Schein, 1977) and supervisory practices (Lawler, 1973).

Alternative Work Schedules

Another method of affecting the organizational structure is alternative work schedules. Alternative work schedules are variations on the standard 9 a.m. to 5 p.m. workday, five days a week. Some variations, such as shift work or overtime have been used for many years. Other variations, such as flexitime, permanent part-time employment and the compressed workweek, are innovations of the 1970s. The discussion of alternative work schedules will focus on these newer variations.

Nollen (1978) described four reasons why alternative work schedules were receiving considerable attention by management, labor and government. The first is that alternative work schedules alter the relationship of the worker to the workplace, often giving workers more control over their hours of work. A national survey (Quinn and Staines, 1978) reported that job satisfaction had declined and a third of all workers reported a problem with inconvenient or excessive hours of work, resulting in interference with family life. Providing the worker with more control over work hours may affect job satisfaction.

The second reason is that alternative work schedules have demonstrated potential for improving the operation of business enterprises. Alternative work schedules can help solve a variety of production problems encountered by management and at the same time meet the human needs of workers (Cohen and Gadon, 1978). The third reason (Nollen 1978) is that alternative work schedules may help stimulate lagging productivity growth by reducing energy consumption, improving family life, and encouraging

equity in employment. Finally, management and workers need to be informed of these trends and the implications of using alternative work schedules to implement such programs successfully.

Flexitime

Flexitime is a work schedule which allows employees to vary starting and stopping times within limits, working a contracted number of hours in a specified time. The typical flexitime program requires that all employees work designated core hours, e.g., 9:00 am to 3:00 pm, and a total of eight hours a day with flexibility in the hours preceding and following the core time (Nollen and Martin, 1978; Rosow, 1978). A few flexitime programs allow workers to carry over hours across weeks or pay periods. In 1977, approximately 13 to 15 percent of all United States work organizations used some form of flexitime. There is some indication that this percentage is continuing to grow (Nollen and Martin, 1978).

Flexitime is generally considered to be a positive benefit to workers. Work organizations which have adopted flexitime often report higher morale and greater job satisfaction among workers (Administrative Management Society, 1978; Cowley and Fess, 1977; Martin, 1975; Nollen and Martin, 1978). One of the reasons given for higher morale is that workers have more control over their work situation (Martin, 1975). Another advantage of flexitime is that traveling to and from the job is easier. Less time is often required because traveling occurs during off-peak hours. Less anxiety results from not having to be at work by a fixed time (Cowley and Fess, 1977; Nollen and Martin, 1978, Swart, 1978). Family life has also been reported as improving. Employees are able to coordinate work and home schedules, often allowing more time with other family members (Martin, 1975; Swart, 1978).

The effect of flexitime on productivity and other job performance indicators, such as absenteeism and tardiness, is generally positive (Nollen, 1978; Schein, Maurer and Novak, 1977; Swart, 1978). Based on 40 case studies and surveys, Nollen (1978) reported that a conservative estimate is that productivity increased in a third to a half of the firms. He reported further that the magnitude of the productivity increase in the firms studied is approximately 10 to 15 percent. Numerous reasons are given for increased productivity. Cowley and Fess (1977) attributed productivity gains to quiet times at early and late hours, employees getting in tune with their biological clocks, and the arrival of workers with less commuting frustration. Fields (1974) indicated there is an increase in hours worked due to less lateness, less strain in commuting, and less time spent on personal business which results in an increase in productivity. Tardiness is all but eliminated under flexitime because workers are not required to be at work at any fixed time except for core hours (Administrative Management Society, 1978; Martin 1975; Swart, 1978). The majority of firms using flexitime also report that absenteeism is reduced anywhere from 2 to 50 percent (Fields, 1974; Martin, 1975; Morgan, 1977; Nollen, 1978). Although productivity gains and job performance improvements are not the primary reasons given by employers for adopting flexitime, they are among the key advantages in practice.

Although the effects of flexitime on employers and employees are generally positive, some limitations and problems exist. The major limitation of flexitime is that it cannot be used in all work situations without job or workplace redesign (Nollen, 1978). Continuous process operations or jobs which require a high level of worker interdependence are particularly affected by the use of flexitime (Lee and Young, 1978). Problems which

sometimes exist for first-line supervisors are: coverage, communication, scheduling, and perceived loss of control, as some decision making shifts from supervisors to workers. Yet, other firms report improved supervisory effects. Supervisory problems do not necessarily result from using flexitime. Finally, the most flexible model of flexitime, which uses debit and credit hours, may be constrained by labor laws which require premium pay for hours worked beyond forty a week or eight a day (Cowley and Fess, 1977; Nollen and Martin, 1978).

Part-time Employment

Another alternate work schedule which is becoming increasingly prominent is permanent part-time employment. Part-time workers constitute one of the fastest growing segments of the labor force. They account for approximately 18 to 20 percent of the labor force, and only about 2.5 percent of part-time workers are part-time because they could not get full time jobs (Deutermann and Brown, 1978; Nollen, 1978; Rosow, 1978). The majority of part-time workers are regular and voluntary. About 47 percent of part-time workers are under age 25 and approximately 34 percent are women with school aged children. There is also a growing number of older workers, nearing retirement age, who are seeking part-time work (Nollen, 1978).

Part-time workers are employed through a variety of schedules and models. The most common use of part-time workers is a part-day full-week schedule (Bureau of Natonal Affairs, 1974). Full-day, part-week schedules are used on a less frequent basis. Part-time mini-shifts is a new way to use part-time workers. These are usually four or five hour shifts, after the full-time day, used to extend the hours of operation and better utilize plant and equipment (Werther, 1976). Another new method

of using part-time workers is job sharing. Two half-time employees share one full-time job. This combines advantages of full-time jobs and part-time employment.

Although the range of jobs in which part-time employment is used has expanded, it is concentrated in sales, clerical and labor jobs and in the trade and service industries (International Labour Office, 1973). Employers generally use part-time workers for operational reasons such as meeting specific labor shortages, coping with peak work loads and regular rush periods, increasing utilization of plant and equipment, and when jobs require either less than or more than eight hours a day to accomplish (International Labour Office, 1973; Nollen, Eddy and Martin, 1978).

While employers hire part-time workers for operational reasons, they often obtain improved productivity and less absenteeism (International Labour Office, 1973; Nollen, 1978; Nollen, Eddy and Martin, 1978). Two major reasons have been identified for the improvement in productivity. The first is that many jobs can be done better for short periods of time, especially emotionally or intellectually taxing jobs or repetitive or tedious jobs (Nollen, 1978). The second reason may be that part-time workers are of high quality. In the present labor market there are many more people who want part-time jobs than there are available. Many of these people are mature women or bright students, so that the quality of part-time employees is usually high (Nollen, 1978). Overall, research indicates there is satisfactory work performance among part-time workers, with many firms reporting that part-time workers have more positive attitudes toward work and are more productive than full-time workers (Rosow, 1979).

The main problems related to permanent part-time employment are supervision and administrative overhead costs (International Labour Office,

1973; Nollen, Eddy and Martin, 1978). Many labor unions are also opposed to part-time employment because: it increases the competition for jobs during periods of high unemployment, part-time jobs are often low level jobs with low pay, and part-time employees are harder to organize into unions (Nollen, 1978; Rosow, 1979).

Compressed Workweek

The compressed workweek is an alternate work schedule where the usual number of weekly full-time hours is compressed into fewer than five days. The most common version of the compressed workweek is the four day week of ten hours each (Nollen, 1978). The use of the compressed workweek began in the early 1970's and involved just over 2 percent of the labor force by 1975. This percentage has remained constant since that time (Nollen and Martin, 1978). The main advantage of this schedule for workers is that it gives them longer periods of leisure time. Yet, satisfaction appears to depend on whether the worker sees this as a shorter workweek or a longer day (Mahoney, Newman and Frost, 1975). Those workers who use the longer period of leisure time for personal enjoyment, appear to be most satisfied. One advantage of the compressed workweek is that it reduces the number of commuting trips. Disadvantages include the effect on family life and fatigue during the working day (Fottler, 1977; Maklan, 1978). In general, the compressed workweek is favored most by young workers, workers at high level occupations, and men. It is less favored by older workers and women (Kenny, 1974; Nollen, 1978; Mahoney, Newman and Frost, 1975).

The effect of the compressed workweek on productivity is not clear. Some employers report improved productivity, others report no change and

still others report a decline in productivity (Gurman and Tarnowieska, 1972; Ivancevick, 1974; Weaver, 1974; Wheeler, Caluasina and Boxx, 1974). Productivity is most likely to be improved in work settings where there are chances to increase the utilization of costly capital equipment, and where travel time is necessary to get to job sites (Nollen, 1978). Therefore, although individual productivity may not be affected, organizational productivity may improve in certain job settings.

Implications for Vocational Education

Participatory management styles have numerous implications for vocational education. At one level, there is a need for workers to be aware of supervisory styles. An awareness and understanding of the roles of immediate supervisors can help workers understand their roles in given situations and be more productive. Also, many types of employee participation programs can be initiated from the bottom-up. In other words, if employees are aware of employee participation programs, such as quality circles, they may be more inclined to propose and recommend implementation of such programs to improve the working environment.

As more companies become involved in participatory management, vocational education can play a key role in helping students and workers understand the decision making process and provide experiences in which this process can be practiced and utilized. Productivity could be adversely affected if students and employees are inadequately prepared to make decisions when placed in a decision making role. Effective decision making is a process that can be learned and improved. Helping students and workers understand and practice this process will enable them to make more effective decisions about work methods and procedures. Vocational

educators can also help students and workers understand how their own decisions can affect other workers, the organization and productivity.

Vocational education can provide a service for the successful implementation of job redesign programs through training in technical skills, decision making skills and supervisory skills. As job redesign programs are implemented, workers may be required to employ new technical skills. By working closely with business and industry, vocational education could design retraining programs for these workers to teach the specific skills necessary in the redesigned jobs. Short-term skill training is one example of such programs. These programs are generally job specific, last a year or less and help the workers keep pace with technological changes.

One means of exposing vocational education students to new job designs is cooperative education. Involving students in programs which utilize various job designs, may increase their ability to work and be productive in such settings when they enter the world of work. An awareness of work designs may also help them select jobs or job settings in which they will be most satisfied and productive or to initiate such programs in firms where they work. Students also may help redesign jobs in school laboratories to acquire "hands-on" experience on the effects of job redesign changes.

Vocational education also has the opportunity to become involved with management training, perhaps in community colleges or within the business organization itself. As changes in the workplace occur, supervisors need to adapt to different roles and responsibilities. For example, in a job redesign program the supervisor's role often changes to one where there is less authority over subordinates. Flexitime also creates new demands on supervisors in terms of scheduling problems and providing supervision

beyond the eight hour day of the supervisor. Supervisors often need retraining to adapt to these situations and to motivate employees effectively to increase productivity.

The organizational structures of firms are changing, in management style, job structure and work schedules, and will likely continue to change in the future. Vocational education can help students become aware of these changes and understand the implications of such changes through classroom experiences and by job experience provided through cooperative education programs. As part of teaching people how to be successful at work, vocational education should have a goal of teaching people how to improve the working environment.

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V

INCREASING PRODUCTIVITY THROUGH VOCATIONAL EDUCATION
AND TRAINING FOR SELF-EMPLOYMENT

Introduction

There is no question that "big" business dominates the American economy. Nor is there any doubt that, in general, the economy is highly dependent on the success of big business. However, small business represents a vital and significant force. The role of small business was extremely visible in the past. In the last century one writer, Alex de Tocqueville, recorded his fascination at the bustling economic activity which confronted him on his arrival in this country. Everywhere he looked he saw one kind of business or another. He saw a nation of people who "dared explore new frontiers, people eager to build lives for themselves in a spacious society that did not restrict their freedom of choice and action. There is undeniably something almost feverish in the activity this freedom imparts to industry and to the human spirit."

Today, the role of small business may be somewhat obscure when viewed in the context of a large corporate industrial society. However, the United States has the most developed and sophisticated small business sector of any country in the world (Nelson, 1980a). Although most people have a fair idea of what a small business is in their own minds, the essential criteria, according to the Small Business Administration, is that the small firm is "one which is independently owned and operated and not dominant in its field of operations" (1974 Annual Report, p. 11). Small business in the United States accounts for 43 percent of the Gross National Product and for at least 95 percent of the business firms in the nation

(Quimby, 1980). About 60 percent of all jobs in the United States are generated by firms with 20 or fewer employees. Large firms (those with over 500 employees) generate less than 15 percent of all new jobs (Birch, 1979). However, the Small Business Administration estimates that 80 percent of the 50,000 new businesses started each year will eventually fail (Van Voorhis, 1980). Since small businesses have such a low survival rate, the number of jobs lost each year in the private small business sector is also high.

The United States faces enormous challenges regarding employment and productivity. Given the importance of small business in the economy, it is a logical arena in which to attempt to meet these challenges. One sure way to create new jobs and increase overall productivity in the economy is to promote the health and survival of existing small businesses and to develop an environment which fosters growth and vitality for new firms. However, government intervention to support and develop this sector of the economy has been minimal.

The Small Business Act of 1980 is an attempt to increase the role of small business in the American economy. The Act states:

Congress hereby declares that it is the continuing policy and responsibility of the Federal government . . . to foster the economic interests of small business . . . and provide an opportunity for entrepreneurship inventiveness, and the creation of small businesses (Public Law 96-302).

This law is significant because for the first time it commits the Federal government to design and implement a national small business economic policy. According to the former chairman of the Senate Small Business Committee, Gaylord Nelson, "This new law lays the basis for adopting a comprehensive strategy to assure a better environment for small businesses, so that they can grow, thrive, and finally survive from one

generation to another." An integral part of the strategy to assure a better environment for small business and thereby to increase productivity in the economy should be training for self-employment (Nelson, 1980b; Paul, 1980, Quimby, 1980, Baker, 1980).

Productivity of the Small Business Sector

As the economic figures cited previously indicate, there is ample evidence to support the notion that small business is vitally important to the productivity of the American economy. Quimby (1980) stated that it is a well known fact that productivity is increased through small innovative firms. This segment of the economy is creating future employment and increasing productivity by utilizing the results of research and development efforts. New products and processes developed by creative small business people spur productivity in established, larger businesses. However, the notion that productivity is greater in small firms is open to some contention. Examination of the productivity of organizations as a function of number of people employed on an industry-by-industry basis indicates that the smaller businesses in a particular industry are often less productive than the larger businesses in that same industry (Sullivan, 1981).

During the 1980 White House Conference on Small Business, it was noted that because of their greater flexibility and ability to relate more directly to workers, small businesses find it easier to motivate employees to achieve increased productivity. According to recent Congressional findings, employee ownership of business increases workers' productivity (U.S. Small Business Administration, 1980).

Stewart (1980), Chief Counsel for Advocacy, U.S. Small Business Administration, recently testified before the U.S. Senate Select Committee

on Small Business regarding problems of declining growth and productivity and the role of small business in the economy. He cited figures which indicate that the small business share of economic output is falling. The Gross National Product (GNP) produced by small businesses, as measured by income generated, has been steadily declining: from 43 percent in 1963, to 40 percent in 1972, and down to 39 percent in 1976 (the figure tabulated from 1980 census data is not available yet). These figures show that the small business sector, while being the most successful at generating new jobs and leading in innovation and productivity, is losing its share of the GNP. A structural change may be underway. Small, dynamic, and innovative businesses are being crowded out by very large businesses. There may be a connection between this trend and the declining national productivity rate. To attempt to solve this problem the White House Commission on Small Business (1980) has set as a national goal that small business should be producing 50 percent of the GNP by 1990. Achieving this goal will require national policy changes to increase small business output.

• The Need for Education and Training in the Small Business Sector

A distinguishing characteristic of entrepreneurs, noted by Nelson (1980b) is the tendency to be independent and self-sufficient. Entrepreneurs have some resistance to working with government and other agencies to meet common goals. Many entrepreneurs want to be left alone to operate their businesses in individualistic manners. This is a major barrier to providing help to the small business sector.

Statistics presented at the 1980 White House Conference on Small Business, highlight the need for education, training, and assistance:

Of the fourteen million enterprises in the U.S., 99.2 percent employ fewer than 100 persons

Eighty percent of all small businesses fail within the first five years of operation

Nine out of ten small businesses fail because of poor management. Specific reasons include: lack of planning, inadequate controls, poor accounting methods, inability to read and understand financial statements, and inability to locate expert advice when needed

Minorities form 20.2 percent of the total population, but own only 4.3 percent of all businesses and generate only .7 percent of all business receipts

Women make up 49 percent of the total population, but own only 4.8 percent of all businesses and generate only 1 percent of all the business receipts

Clearly, there is a need for targeted education and training programs for self-employment.

The White House Conference on Small Business also identified education, training, and assistance as one of twelve policy issues. The Issue Paper on Education, Training, and Assistance (1980) indicated:

There is an urgent priority in the current national crisis of confidence to encourage the expansion and vitality of small entrepreneurs as a long-term factor in the American economy. It seems apparent that there is a need for re-establishing a strong base for small business and a re-introduction of the small business option to the American public. In other words, there is a need for a systematic nationally directed program of education for entrepreneurship (p. 377).

Paul (1980) stated that except for farming and a few experimental programs, there has not been any systematic effort to train youth and adults for self-employment. However, through the efforts of the Small Business Administration, a few universities, community colleges, and area vocational schools, progress has been made in recent years.

The White House Commission on Small Business (1980) reported that there is a need for a systematic, national program of education to encourage entrepreneurship. This program should include both initial education and means to provide continuing management assistance. Specific recommendations include:

- (1) A National Policy should be established for the support of entrepreneurial education and training, continuing education and management assistance, provided by the public and private sector, as an opportunity for every American who wishes to own his or her small business and should receive recognition as a priority from the highest levels of government.
- (2) Congress should enact legislation that would provide tax credits or other tax incentives for: a) expenses incurred to educate small business owners and operators regarding the management of business, and b) expenses incurred to conduct continuing education and training and to provide on-the-job entrepreneurship experience (p. 91).

Closely related to education and training is the need to increase public awareness of the problems and potentials of self-employment. Recognizing these training needs, Congress passed the Small Business Development Act of 1980. This law authorizes \$20 million in Federal matching grants for Small Business Development Centers (SBDC's) to provide technical and management assistance to small entrepreneurs. These centers will be operated through state institutions.

Implications for Vocational Education

There is general agreement among many economists and most vocational educators that significant increases can be obtained in productivity through improved training (Paul, 1980). It seems apparent that the productivity rate in the U.S. economy can be increased by providing education, training, and assistance to the small business sector. Training aimed at improving the productivity of individual businesses has an obvious cumulative effect. If education, training, and assistance can improve the productivity of owner/managers of individual small businesses and their employees, the productivity of the small business sector will increase.

Until recently, formal education related to small business ownership and management has not been very popular. Management education at all levels has tended toward the preparation of managers for large business

and industrial organizations. It is ironic that despite the espoused commitment to the American dream that anyone can own a business and be his or her own boss, students are rarely taught the basic knowledge and skills necessary for operating businesses successfully. These skills are learned primarily by self-employed individuals through trial-and-error methods. It might be assumed that a relationship exists between this method of learning necessary management skills and the high rate of small business failures which affect the productivity rate of the economy. If a greater number of small business firms can become more productive at a faster rate, the productivity of the entire economy would necessarily improve.

In the past, vocational education's involvement in education and training aimed at the small business sector has also been minimal. However, the National Advisory Council on Vocational Education recently stated that entrepreneurship activity is a by-product of the vocational education experience which should be more strongly developed. In addition, the Council indicated that vocational education should provide encouragement and training to aspiring entrepreneurs to assist them in establishing and expanding their own business (Issue Paper on Self-Employment, 1979).

The evidence suggests that vocational education has a role in training potential entrepreneurs. Of the approximately 15 million students enrolled in secondary and post secondary vocational programs (National Advisory Council on Vocational Education 1979), a sizable portion prefer to be and/or become self-employed. Wenzel (1979) reported that a survey conducted in Middlesex County, New Jersey, indicated that of those persons graduating from vocational programs 25 years ago, nearly 9 percent eventually owned their own business. Nelson (1980b) estimated that three or four students in a typical vocational education class will eventually own

their own business. He indicated further that many more students may have the potential and desire to become self-employed.

That Americans desire independence is revealed in a study published in 1979 by The Survey Research Center at the University of Michigan. Between 1974-1979 the Center interviewed two million graduating high school seniors to determine what type of work setting they preferred. The results indicated that approximately 60 percent prefer an entrepreneurial setting: working for themselves, with a small group of partners, or in a small enterprise, rather than in a large organization (Stewart, 1980).

One potential way in which vocational education can have an impact on increasing the productivity of the small business sector is to help to prepare people for self-employment. There is a growing appreciation in the United States of the importance of the individual entrepreneur to the economy. As evidence showing that small businesses are the primary source of new ideas, new economic growth, and new types of work mounts, vocational education must pay deliberate attention to preparation for self-employment. The National Advisory Council for Vocational Education (1979) has stated that "The vocational system has paid far too little attention to the people who discover work on their own, who create their own employment, the people we call self-employed" (p. 3).

Another, and equally important, way in which vocational education can impact on improving the productivity of the small business sector is continuing education and training efforts designed to assist those who are already self-employed. Birch (1979) emphasized that reaching these people will be difficult because they are small, independent, and volatile. He indicated that the very spirit which gives them vitality is the same spirit

which makes them uncompromising partners in education and training efforts. However, the recommendations for education, training, and assistance, which were developed by the delegates at the 1980 White House Conference on Small Business, encourage partnerships among government, educational institutions, and business to initiate a national program.

Baker (1980) presented four tiers of relationships between the entrepreneur and the educational system. The first tier focuses on teaching people who have some interest in becoming entrepreneurs. The second provides vocational education an opportunity to offer management training to people who have already chosen to be entrepreneurs and are in business. The third tier consists of training workers for small business firms. The final tier involves training people such as government small business administrators, bank managers, and consultants to work together to increase the vitality of the small business environment in the local community.

Nelson (1980b) identified similar levels of training or target groups that should receive education and training for entrepreneurship. The first target group is labeled "future entrepreneurs," who he identifies as young people in school who are considering small business ownership as a career option. A second group called "potential entrepreneurs" includes persons in the labor force who are ready to initiate action to become self-employed. The third target group, "existing entrepreneurs," is made up of persons who currently operate small businesses and are in need of assistance. The final group is "growth-oriented entrepreneurs." These people have viable businesses which they are interested in expanding.

To provide viable education and training to individuals who are already self-employed, vocational education will need to utilize less traditional methods of providing training and work more closely with other

agencies, institutions, and organizations. Baker (1980) offered one example of a new way to link productivity, small business, and vocational education. He suggested a "pay-as-you-go" based consortium of major universities in a state to provide a small business productivity extension service based on the successful model of the Agricultural Extension Service.

Vocational education must define and develop new methods to link training to the small business sector. These methods need to be designed to meet the specific needs of potential and existing self-employed individuals. The following assumptions resulted from a survey concerning entrepreneurial training efforts conducted for the Illinois Advisory Council on Adult, Vocational, and Technical Education (University Consultants, Inc., 1980). These assumptions will be helpful when initiating new approaches:

Within the business and education communities, opinions vary sharply on the value of entrepreneurial training.

There has been a great deal of concern expressed about the availability of entrepreneurial training, especially for minority group members and, more recently, women.

There are different types of entrepreneurial training with the differences related to the nature and length, sources, and purposes of the training.

Foundation support for entrepreneurial training does not exist on a significant scale.

Those training opportunities which do exist are very popular, which suggests that if more were offered, more people would participate.

A good deal of entrepreneurial training is being provided directly by the academic community, much of it in cooperation with the Management Assistance Division of the Small Business Administration.

Entrepreneurial training opportunities are not equally accessible throughout the state to all who might be interested.

Most of the available training activity is concerned more with the sustenance and expansion of existing businesses, rather than with the preparation of new entrepreneurs.

There seems to be a direct correlation between certain personality characteristics which are not easily trainable and entrepreneurial success.

In general, free forms of technical assistance are poorly publicized and regarded by most of the entrepreneurs who utilize them as being less useful than the instruction and orientation services for which they pay a fee.

The effects of entrepreneurial training are not carefully evaluated.

Coupled with the new enthusiasm to meet the challenges that entrepreneurship education offers, these assumptions can provide the basis for a new dimension in vocational education.

Vocational education can have significant impacts on the declining productivity rate in the United States through education and training designed to prepare people for self-employment and to assist individuals already self-employed to operate viable and growing enterprises.

By utilizing the voice and existing structure of the vocational education network throughout the nation, including the national and state advisory councils, a general public awareness of the problems and potential of the small business sector can be created. Vocational education should strive to encourage workforce policy which emphasizes incentives for self-employment.

Greater emphases need to be placed on self-employment as career options at all levels of education. The concept of owning and operating an individual small business should be introduced in education programs at the elementary school level and further explored at the secondary school level. Opportunities for education and training for self-employment should be made available to all students through vocational education programs at secondary and post-secondary levels.

Community colleges should be encouraged to expand efforts to provide education and training in small business management. How educational programs can be modified to prepare people better for self-employment needs to be determined. Special efforts should be undertaken to prepare women and minorities for self-employment.

The universities need to emphasize in their teacher education programs the training of vocational educators to work with small business owners and managers. Universities can also help train needed small business consultants and can conduct research to learn more about entrepreneurs and how to nourish these characteristics.

To provide education and training which meets the specific needs of self-employed individuals, new methods and concepts of delivering instruction will need to be explored. Small business owners and managers are extremely busy people who generally will not take time to travel to traditional classroom settings for theoretical instruction. No-nonsense practical approaches with flexible scheduling and instruction tailored to meet specific needs must be devised.

Staffing of instructional programs must utilize successful small business entrepreneurs. Methods to capitalize on the practical business experience of these individuals and on the pedagogical strengths of educators must be developed. Serious consideration must also be given to developing ways to work with other agencies, institutions, and organizations (e.g., Small Business Administration, SBDC's, CETA, etc.) which are attempting to provide training and assistance to small businesses. Advisory committees comprised of local, successful small business owner/managers and Small Business Administration representatives should be established to provide advice and assistance in the operation of small business vocational programs and services.

Summary

Although more accurate measures are needed, the small business sector undoubtedly has an important impact on the productivity of the United States economy. The very real training needs of persons who operate small businesses are not being met adequately. Vocational education can provide more and better training for potential entrepreneurs and for those who are already self-employed.

In order for this new emphasis to have a substantial impact, however, vocational education will have to re-shape some of its traditional concepts. New methods of assessing the needs for and providing training in this area need to be developed and methods need to be devised to work cooperatively with other agencies and institutions to present a united effort to rekindle the vitality and spirit of the small business sector. Vocational education is in a position to provide the necessary leadership to increase the productivity of the American economy by emphasizing training for self-employment.

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VI

ESTABLISHING COOPERATIVE EFFORTS TO INCREASE PRODUCTIVITY

Introduction

By their very nature, efforts designed to develop a trained, employed, and productive workforce include the vocational education network. Vocational education must become, and be recognized as, an integral part of the economic development strategy of states, regions, and local communities. Methods need to be devised to link vocational education, broad employment and training programs, and employer needs.

To make a major contribution to increasing workforce productivity of the United States, vocational education must work cooperatively with the private sector and with federal employment and training programs. The concept of collaboration is not new. For example, Wirtz (1975) described community-education-work councils as a method to make fuller use of the human resource and to take advantage of "the new American prospect: of growth unlimited, based on what is inside of people as individuals, through a new coordination of the classically equal but separate forces of education and work" (p. 3).

There seems to be general agreement regarding the need for cooperative arrangements among the vocational education system, the private sector, and the federal employment and training system. A position statement of the National Association of State Directors of Vocational Education (1980) indicated that the "responsibility for economic development, productivity, and efficiency is shared by vocational educators, employers, employees, community agencies, and government" (p. 4). In addition, it is the particular responsibility of vocational education "to ensure that the

necessary connections exist between education and training and the workplace, and to make instruction accessible at the time and places it is most needed" (p. 5).

The membership of the American Society for Training and Development (ASTD) is representative of public and private employee education and training. Robert L. Craig, Director of Communications for ASTD recently stated that education and the work world must collaborate much more closely if significant progress is to be achieved in solving the important national problems which relate to this nation's workforce: productivity, unemployment, inflation, technological advance, and, in general, improving the economic and social well-being of the nation (1980).

Authors and advocates of employment and training programs at the national level have recognized the imperative nature of a strong interface between the Comprehensive Employment and Training Act (CETA) and education, in particular vocational education. The CETA Amendments of 1978 openly encourage and even mandate in one case linking CETA programs with education.

For vocational education to have a more effective role in increasing the productivity of the workforce (and in economic development in general) the perception of education as a separate, self-sufficient, and isolated entity unto itself must be changed. The remainder of this chapter focuses on enhancing cooperative efforts between vocational education and the private sector and the CETA employment and training system to increase the productivity of the workforce. Isolating the concept of productivity and concentrating on efforts to improve it, although beneficial in its own right, may serve as an example of how cooperation and interaction can help to solve the nation's broader economic problems.

Private Sector Interface

Improving job training efforts alone will not resolve the serious economic problems faced by the nation. Pierce, Hagstrom, and Steinbach (1979), among others, have indicated that the single most effective factor is a strong economy. However, effective job training and its relationship to increased productivity does fit into an overall strategy for economic development. Strategies to increase the overall rate of productivity which involve the more effective use of human resources must take into account the effects of job training. Determining where vocational education fits into the job training strategy may be instrumental to a more productive workforce.

Despite the espoused use of community advisory councils, vocational education has all too often operated in a vacuum, concentrating educational and training efforts on traditional beliefs of what is required of productive workers. The blame for this isolation cannot be placed solely on the vocational education system. Wirtz (1975) observed that there has been "continued reliance, so far, on what are virtually unilateral efforts within the educational system alone to do what is now recognized as a function clearly involving both education and work" (p. 3).

Craig (1987) estimated that at least \$40 billion is being spent annually by private industry in employee education. He stated that this training industry has evolved because many employer education and training needs have not been met by the traditional educational system. Although much of this employee training is undoubtedly job specific, he contended that a significant share is probably sufficiently generic that it could, and should

be, done by the traditional educational system. In addition, he wondered "just what positive effect we might see on issues such as national productivity if all our high school graduates could function at the twelfth grade level" (p. 16).

A stronger interface between vocational education and the private sector appears to be necessary so that vocational educators are aware of what students need to know and what competencies are needed to be successful and productive workers.

Models for Providing Relevant Job Training

Throughout the nation numerous examples can be found of private sector participation in education to improve the relevance and impact of job training. Many of these are short-term training programs which involve skill-specific learning and usually last less than one year. According to Kowle (1981), these programs may be designed to meet the needs of a particular industry, to attract new industry, or to train the unskilled, underemployed and unemployed to enter the job market, advance in their jobs or keep pace with changing technology. In his testimony before Congress in September, 1980, Gene Bottoms, Executive Director of the American Vocational Association, stated that 14 states now have highly developed systems for coordinating vocational education and training with economic development efforts of their states. The examples which follow represent some of the cooperative efforts between vocational education and the private sector to provide relevant job training.

South Carolina's Technical and Comprehensive Educational System (TEC) was developed in the early 1960s as a remedy for economic problems in a state dominated primarily by textiles and agriculture. The system began with a series of start-up programs to train selected employees for

specific jobs in diversified industries and has expanded to sixteen technical colleges and fifty-five vocational high schools. Since the inception of the program, special training programs have been conducted for about 600 industries. Dudley (1980) described the program as following "a proven formula for enhancing quality production and reducing employee turnover (and absenteeism) in each new or expanding plant" (p. 10). He indicated that the current program, Design for the Eighties, includes projects throughout the TEC system to provide well planned, flexible training programs yielding more versatile and more highly skilled employees. Individual training consultants based at the sixteen colleges keep current with training requirements and training procedures. Occupational training during the 1980s will be determined by industrial requests for TEC programs and services. As industrialists change their production processes, technical training will reflect these changes.

Illinois has developed the High Impact Training Services (HITS) program to provide individually designed employee training programs for businesses and industries in the state which are expanding or making significant technical changes or which are new to the state. Program elements such as content, objectives, and productivity standards are specifically integrated into each training service to meet the unique objectives of individual companies. The training programs are delivered by local educational agencies. The Illinois State Board of Education, Department of Adult, Vocational and Technical Education assists in delivering the training programs.

Oklahoma maintains a group of vocational educators who serve as local industrial coordinators and are located strategically around the state (Goodman, 1979). These coordinators maintain contact with the industrial

firms within their region, assess training needs and plan training programs to meet clients' specific needs. These coordinators serve as important linkages between industry and state and local vocational educators. Industrial coordinators are also used in other states, such as Mississippi and Maryland.

Florida is another state which attempts to provide coordinated job training programs at the local level. Local vocational schools and technical institutions provide training under contract to the state economic development agency. This agency is responsible for needs assessment, client contacts and planning training programs. Recruitment of trainees is shared between vocational education and the state agency.

The programs described above are designed to strengthen linkages between commerce and industry and education to provide relevant job training. McBeath (1974) stated that relevant job or skill training will enable individuals to work more efficiently and can improve productivity. He claimed:

For the introduction of most techniques, or training in new skills, the 'play' time when students are doing the work experimentally is part of the learning curve at the poorest performance stage. If this phase can be worked through before the pressures of the daily work load are applied, the level of competence from that point on will be much higher (p. 142).

Learning skills in classrooms and laboratories prior to using them on-the-job can improve productivity of persons as they begin work.

CETA/Vocational Education Linkage

At this writing, the future of CETA as a major federal employment and training program is uncertain. However, the feeling expressed by most observers and writers is that if and when CETA is dismantled, re-organized or altered in some fashion, a federal employment and training

program by whatever "title" will remain. Although the focus of this section is on CETA/vocational education linkage and cooperation, the discussion is appropriate to cooperative efforts between vocational education and all manner of federal employment and training programs.

There are major philosophical and structural differences between the CETA and vocational education systems. For many CETA prime sponsors, the involvement of vocational educators in the planning and delivering of CETA services has occurred with little difficulty. However, for others the needed cooperation has been difficult to achieve. Barriers to successful coordination range from program design problems to problems of mutual distrust and turf protection (United States Conference of Mayors, 1981).

Many opportunities for coordination have not been given adequate attention at the national, state, or local levels. Cooperative training efforts represents one area for cooperation which may increase the productivity of the workforce. Coleman and Wurzburg (1979) emphasized that a major need of those who seek strong coordination between the CETA and Vocational education systems is greater access and exposure to ideas and models. The examples which follow represent some of the cooperative efforts between vocational education and CETA to provide job training.

Linkage Models for Providing Job Training

The United States Conference of Mayors (1979) studied the status of CETA/vocational education coordination at the state level. California and Minnesota were identified as utilizing effective coordination approaches. Among the factors contributing to the success in California were: a) the development of a planning structure that encompassed the State CETA office, the Manpower Education Section of the Department of Education, the community college system, and the Vocational Education Commission, b) the

cooperative relationship established between the Manpower Education Section and prime sponsors, c) the willingness of the Department of Education to allow prime sponsors to use special grant funds for programs outside the public vocational education system, and d) the development and dissemination of policies and procedures for using special grant funds before these funds were allocated.

In Minnesota two additional important factors contributing to effectiveness were reported. The first was A Special Programs Office of the Department of Education which had been established before the enactment of CETA legislation and which was experienced in delivering services to CETA-type participants. The second was the establishment of a separate unit of this Office devoted exclusively to the encouragement of CETA/vocational education linkages.

As was pointed out in the previous section on cooperative training efforts with the private sector, South Carolina exhibits a high degree of coordination in its job training activities. The state Technical and Comprehensive Education program (TEC) is the prime subcontractor for all vocational training under CETA. The State Superintendent of Education serves on the TEC advisory panel.

The Maryland State Education Agency also has been active in tying work and education together. The state level agency was appointed prime sponsor for the Balance-of-State CETA program and the educational coordinator for CETA training sites on the state workforce planning council. At the local level, the state education agency assists in disseminating information and encouraging local education agencies to cooperate with CETA sponsors.

Cooperative efforts at the local level are quite common. Conserva, Inc. (1980) analyzed 111 exemplary Youth Employment Demonstration and Project (YEDPA) programs which brought CETA and vocational education agencies together in successful coordination efforts at the local level and identified criteria believed to be central to the concept of successful coordination. The criteria stress joint planning and evaluation activities by CETA and vocational education personnel, suggest well-defined policies to ensure strong cooperation, and emphasize the need to involve vocational education in developing processes that meet the needs of YEDPA participants. Also identified as central to successful coordination were provision of needed services before entering and after leaving the program, cooperation with private industry and others to ensure job opportunities upon completion of training, and tailoring vocational programs to needs.

In the Springfield, Ohio area there is cooperation between educational agencies and CETA. Schools are independent of the rest of local government and vocational education is administered separately from other education programs. The county joint vocational school has been involved with county workforce program initiatives through CETA contracts and has established a strong CETA-LEA program with the area prime sponsor.

Baltimore is an example of local cooperation. Authority for both CETA and educational programs are the same. The city workforce administrator and chief school officer receive policy guidance from the mayor. This allows for directed cooperation. Employment and training programs are organized within the vocational education departments of schools and the workforce agency cooperates in developing work experience slots for CETA eligible youths in the programs (Coleman and Wurzburg, 1979). Linkages between businesses and schools in Baltimore have contributed to successful Education/CETA cooperation.

The Durham Employment and Training Office in Durham, North Carolina, has developed a strong cooperative relationship with the Durham Technical Institute (DTI) a part of the state community college system. The DTI provides all classroom training for the Durham prime sponsor. The prime sponsor and DTI have divided responsibility according to expertise of the two agencies. DTI has expertise in training. Therefore, it has developed the curricula, established performance standards, and implemented programs. The prime sponsor has expertise in meeting the needs of CETA participants and, consequently, selects those best suited for programs and provides necessary counseling. All DTI CETA activities are handled by a CETA director employed by DTI. This centralizes communications and provides an excellent mechanism for resolving problems.

The Bluegrass Employment and Training Program (BETP), a six-county consortium based in Lexington, Kentucky, has developed a successful relationship with a local vocational institute which supplies skill training for CETA clients in a variety of modes. The prime sponsor believes that the vocational education system must not dilute its programs or lower its performance standards to increase the success rate of CETA participants. Consequently, the BETP utilizes its own job preparation program to improve basic education skills and prepare participants for the requirements of a job training environment (United States Conference of Mayors, 1981).

The Hampden County Manpower Consortium, based in Springfield, Massachusetts, represents an approach to CETA/vocational education coordination that does not involve the exchange of funds. The Mayor of Springfield has established a Commission on Technical Education and Training to assess labor force needs, outline requirements for training

programs, and identify the appropriate agency to provide the training. The consortium operates its own skill centers. This has not created a barrier to coordination since each of the training institutions in the area has identified its own training role. The consortium, because of its flexibility, establishes short-term training programs. The vocational education institutions, operated through the local school systems, develop effective long-term training activities. The community college provides training opportunities of a more technical nature than those provided by the prime sponsor or the vocational education institutions. By recognizing these role differences and coordinating activities through the commission, duplication of training efforts has been minimized. Local labor needs have been met by a community training approach. Through the commission, CETA and vocational education have become integral parts of the community's economic development activity (United States Conference of Mayors, 1981).

Implications for Vocational Education

The final report of the National Center for Productivity and the Quality of Working Life (1978) suggested a national productivity effort to overcome problems and guide us toward future opportunities. "This national effort should draw upon the contributions and experiences of all groups of society, and it should proceed on many fronts, for there is no simple, dominant source of productivity growth" (p. 83). In addition, the report called for establishment of a network of state and local productivity centers to provide information, technical assistance, and training on ways to improve productivity.

Establishing cooperative efforts to improve the productivity of the workforce must certainly involve the vocational education community. However, vocational education cannot, and should not, be expected to resolve the problem of lagging productivity by itself. The most obvious and logical contribution vocational education can make is to provide relevant education and training. Vocational education can set education and training for higher productivity as an important goal and can support and reinforce counterpart efforts at the national, state, and local levels to seek productivity gains. Adequate qualitative and quantitative productivity standards can be included in vocational education programs. Vocational teacher education programs can emphasize productivity standards and illustrate successful linkages among CETA, vocational education, and the private sector more effectively.

Working with the private sector to establish clear guidelines regarding what should be taught in school and what can best be learned at work is one way to begin cooperative efforts to educate and train productive workers. These guidelines may be established at the national and state levels, and may differ from one industry to another. They must be flexible enough to accommodate local differences and needs. Establishment of strong, active, and effective advisory councils is a mainstay for achieving these guidelines. In most communities, such councils exist but have not been given this task and are seldom utilized to their fullest extent. Collaboration and communication between vocational advisory councils and CETA prime sponsor private industry councils (PICs) are needed to increase the effectiveness of training efforts at the national, state, and local levels. Task oriented agendas can be developed by these councils to address worker productivity education and training matters specifically.

The vocational education system can be actively involved in workforce planning. Although the improved productivity of a firm is a factor in its long-run competitiveness and viability, the employees' fear of displacement, especially in periods of economic uncertainty, often represents a substantial barrier to improved individual and group productivity. Productivity improvement efforts could be enhanced if higher productivity were not regarded as a threat to job security. As workforce planning conducted by firms estimates future labor requirements and skill needs, vocational education can help to deliver programs for retraining to those workers who are affected.

Although this chapter focuses on specific examples of cooperation among vocational education, CETA, and the private business sector, any discussion of models for providing relevant job training, also must include the cooperative education method of instruction.

As new entrants to the labor market, youth are generally less productive because they lack experience (Freeman, 1979, Mark, 1979). Building on the assumption that youth become more productive workers as they gain experience, the need for expansion of cooperative efforts between education and work for young people while in school is apparent.

Almost 40 percent of high school students aged sixteen to nineteen have reported either working or looking for work (Paines, 1971, Wirtz, 1975). This represents a broad base already in place for the further development of work-study and cooperative education learning programs. Wirtz (1975) concluded that "young people are telling us, by what they are already doing, that we are making a serious mistake in keeping two separate sets of books and virtually ignoring this now substantial area of dual activity simply because the two parts of it come under different institutional jurisdictions" (p. 27).

Tyler (1980) estimated that 35 percent of our young people believe that there is no reality to work and they do not expect to get a job. He suggested "that is why it is so important to have widespread cooperative education, not just for a favored few" (p. 54). Tyler (1980) estimated the number of young people that have actual work experience in cooperative education is far less than 50 percent. Harnischfeger and Wiley (1980) indicated less than 20 percent of high school seniors are enrolled in work related school programs.

The effects of cooperative education on productivity of young workers are not well documented. However, Stadt and Gooch (1977) offered a description of cooperative education which emphasizes its importance: "Especially for the young who have not learned productive, economic responsibility gradually . . . cooperative education is a viable method for assuring that the junction of schooling and working is a 'merge' as contrasted to a 'yield' or a 'stop' intersection" (p. 29). Expansion of cooperative education may be one method to increase the number of youth who become productive workers early by gaining work experience. If cooperative education helps youth to understand their roles in the work world and to perceive their future growth in it, a sense of mission may be achieved which will undoubtedly affect productivity.

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VII

NATIONAL TRENDS:
IMPLICATIONS FOR PRODUCTIVITY AND VOCATIONAL EDUCATION

Introduction

A discussion of the potential roles for vocational education in improving the productivity of the workforce must recognize and consider the importance of change. Fundamental social, economic, and political changes are occurring in the United States. Few industries, professions, or systems will enter the 1990s with the same characteristics possessed in 1970. (Naisbitt, 1981). Failure to account for effects of change on systems or organizations can result in stagnation and directly affect future productivity growth. Adapting to change is necessary for survival and growth.

Technology and societal factors continue to alter our public and private institutions at an accelerating pace.² This has broad implications for vocational education. Training and education have undergone profound changes during the past two decades and must continue to change to keep pace with technological advances and societal trends. Recognizing interdependence with other elements of society places vocational education in an ecological perspective. Viewing the role of vocational education within the context of a total environment, which includes economic, social, political and technological influences, offers further insight.

The nature and course of certain trends may be discerned by analyzing social and economic indicators. Analyzing and forecasting trends is an imperfect science. However, it is significant for shaping the nature of industrial, educational, and governmental policies which can affect the growth of productivity and the roles for vocational education in helping to

improve productivity of the workforce. This chapter discusses some of the key trends in our society which have implications for productivity growth and vocational education.

National Trends

Economic

Beginning in the mid 1970s rapid growth in the United States subsided. Lack of capital investment, energy shortages, and inflation constraints contributed to the abrupt change (Mark, 1979). The United States has the highest absolute rate of economic output of the industrialized nations. Per capita, it is still the most productive nation on earth (Peloquin, 1980). However, over the past thirty years the productivity growth rate, as measured by output per hour of all persons, has been far below that of its key competitors. If the present rates of growth continue, the United States will be surpassed by West Germany and Japan by 1985 in Gross National Product (GNP) per worker-hour (Organizational Dynamics, Inc., 1980).

Structural pressures on the economy have become apparent. Since World War II the explosive growth of cities, migration of workers, changing workforce composition, fluctuations in the birthrate, and increased educational attainment have constituted severe structural pressures on the nation's economy. Demands on the system are elicited by an ever aging population, faster rates of economic and technological obsolescence, a generally lower demand for basic consumption goods, and an increased demand for service and quality of environmental factors, including the work place.

Furthermore, the labor force is expected to grow in the 1980s and decline in the 1990s. Consequently, a major problem is how to reduce un-

employment in the 1980s without creating further economic and employment problems for the 1990s. Measures taken must not be irreversible.

Technological

Advancing technology has had profound effects upon the nature of society and its institutions. By the turn of the century, the United States had changed from an agricultural to an industrial based society. More recently, society has been characterized as post-industrial with a service based economy. Likewise, the dominant commodity has evolved from agricultural products, to manufactured products, to information related products. The United States is becoming a society based on knowledge industries (Strassmann, 1980).

Post-industrial emphasis on a service economy is resulting in a change in the ratio of white collar workers to blue collar workers. During the 1980s the number of white collar jobs will increase by 24 percent while the number of blue collar jobs will decrease by 25 percent (Odiorne, 1980). It is estimated that by 1985 nearly half of the 104.5 million civilian workers will be employed in offices in clerical, technical and managerial positions. Automation will expand and further technological advancement will continue to meet the needs of the "knowledge workers" (Strassmann, 1980). An increase in the demand for skilled workers is expected.

Rising costs of labor are resulting in increased use of equipment to replace unskilled American workers. In addition, there is greater use of foreign labor through imported workers, imported products, or relocation to other countries where the cost of labor is less (Odiorne, 1980).

Demographic

The composition of the United States labor force for any given year is a product of many factors beyond the number of people of working age.

Individual and family work-leisure trade-off decisions, perceived need for formal education and training, incidence of disability, provisions for retirement, familial obligations, and demand for labor are examples of important factors affecting the composition of the workforce.

A larger proportion of the adult population is in the workforce than ever before and the composition is changing. More females and teenagers are seeking paid employment and the proportion of men in the labor force is declining. Female workers accounted for 62 percent of the increase in the labor force between 1970 and 1978. Forecasts predict a continuing upward trend during the 1980s (Mark, 1979). The proportion of nonwhite workers in the workforce is increasing. More workers have middle-class, urban backgrounds and have increased educational levels. There are more dual career families and more single parents in the workforce. These trends are expected to continue (Freeman, 1979).

New work attitudes are becoming apparent. Workers are more concerned about the quality of work and work conditions. As leisure time takes on added importance, there is a general commitment to fit jobs to lifestyles. More people are expecting "good jobs" to mean more than steady work and satisfactory pay. They are seeking interesting and challenging work, independence, responsibility, and a greater voice in what goes on in their jobs (Katzell, 1979).

More opportunities for older people and the later mandatory retirement age for many workers have resulted in a higher proportion of this age group staying in or returning to the labor force. In addition, life expectancy has increased to approximately 69 years for males and approximately 77 years for females (Swanson and Michaelson, 1979). Advances in health care suggest this trend will continue.

In addition to the changing composition of the labor force, the United States is experiencing a shift in the location of population and industries. Dissatisfaction with the contemporary environment is the motivating factor, whether it is viewed from the perspective of the worker, i.e., lack of significant job opportunity; or from the industry, i.e., lack of significant growth potential. As cities become more congested, people have begun to move to rural areas and towns. (Naisbitt, 1981)

Currently, there is an influx of people into the sun-belt regions, spurring the development of the service sector in those areas. Furthermore, industry is moving into areas where labor is cheaper and to the states which have "right to work" laws to escape the costs of unionized labor. Many of these areas are in the south, resulting in a shift in the geographic distribution of employment away from jobs in the eastern and mid-western industrial areas. (Naisbitt, 1981).

More than one-third of the workforce changed their detailed occupational category in the period from 1965 to 1970 (Freeman, 1979). The trends suggested here point to a highly mobile and flexible labor force as a continuing pattern.

Governmental

Although the outcomes of newly introduced legislation are uncertain at the time of this writing, it is important to note the broader context of governmental change in the nation. Key trends related to this change are: a) a more decentralized government, b) fewer federal regulations, c) a reduced federal budget for social programs, including education and training, and d) a commitment to the revitalization of American commerce and industry (Naisbitt, 1981).

Budgetary allocations will affect labor market conditions. A decrease in spending for social services will result in a decrease in the growth rate of many social service related occupations. On the other hand, increased spending for defense will likely increase the number of jobs in defense related industries. Proposed cuts in social security benefits may affect the number of older workers in the labor force.

Currently, over 50 million people are receiving some kind of direct government aid or in-kind transfer payments. For some people it is the sole source of income. Apart from any social assessments, the fact that government aid can be an alternative to work may have a significant impact on the workforce. Adjustments in the amount of aid available may affect the supply of American workers for lower level jobs. Factors such as welfare, along with the decline in the growth of the labor force are expected to produce a shortage of 5 million unskilled workers by 1990. Predictions indicate that one source of unskilled workers in the future will be immigrants, particularly Mexican workers. A major influx of immigrants into the labor force will contribute to a continuing change of the characteristics of the new worker (Odiorne, 1980).

Implications for Productivity and Vocational Education

Optimism has been expressed about the effects of several of the trends identified above on the productivity growth rate (Mark, 1979). For example, the changing composition of the labor force, i.e., primarily the entrance of large numbers of inexperienced youth and females, which negatively affected productivity growth in the 1970s, is likely to have a more positive effect during the 1980s and 1990s. The last of the post-war baby-boom population is expected to be absorbed into the labor force during the next decade. In addition, the sharp decline in the birthrate in

the 1960s indicates a slowdown in the rate of increase of new entrants into the labor force. As a greater proportion of workers enter the more experienced and more productive higher age groups, productivity is expected to continue. It also will be primarily in the central age groups and into more productive occupations.

Application of technology and resulting new and emerging occupations may also positively affect productivity growth. Advanced technology will continue to eliminate many of the low-skill, low-wage occupations which are considered to be less productive. For example, continued advancements in electronic communications will eliminate many routine clerical positions. These jobs will need to be replaced by communication management positions which can lead to greater productivity. Job redesign programs also may change the nature of many occupations by providing workers with opportunities for more responsibility and a greater voice in decision making.

The potential effects of a more experienced workforce and the application of new technology are positive. However, an increase in productivity growth cannot be realized unless workers are able to adapt to change. The trends discussed in this chapter support the need for training, re-training, and effective job counseling and placement.

Vocational education programs which help prepare youth to enter the labor force will be needed in the future. However, the anticipated decreased number of youth entering the workforce in the next decade should make this need more manageable. Vocational education programs can be redirected to facilitate necessary adjustments changing labor demands.

Providing vocational education and training in job skills which can be utilized in a variety of occupations is one way to help workers adapt to changes in the work world. This represents a change in the concept of

training from solving immediate problems to providing workers with the traits, knowledges and skills which will enable them to anticipate change and adapt to different or changing occupations.

Programs designed for short-term, intensive, job-specific skill training can complement this effort. Job-specific skill training is particularly beneficial for individuals who are entering new and emerging occupations, need skill upgrading, or are making mid-life career changes. Target groups for these programs include, but are not limited to, older workers, females, and special subpopulation groups such as economically disadvantaged, handicapped, and limited English speaking individuals. Effective career counseling and job placement services are essential. These services will enable individuals to obtain jobs in which they can be most productive as they adapt to an ever-changing work world. However, as accelerating changes in the technical skills needed in the workworld occur, serious consideration must be given to the problems of maintaining up-to-date equipment and facilities and instructors with current knowledge in vocational education and training programs.

While some trends offer reason for optimism regarding productivity growth, others suggest negative effects unless solutions are found to existing concerns and problems. For example, increasing costs for labor and energy and for worker safety and environmental protection programs will continue to hinder productivity growth.

The effects of governmental trends on productivity are uncertain. The 1981 Trend Report concluded that there is no measure of tax incentive, reduced federal spending or relaxed regulation that will cause the rebirth of industries, firms, or institutions whose time has passed. New regulations will likely accelerate the changes already taking place and

cause rapid rearrangement of goods and service producing industries. As government becomes more decentralized, it is the state and local people who must react and adapt to these changes.

Decisions made by state and local governments concerning the authorization of money for government, commerce, and education will influence productivity growth. Money must be invested in up-dating and improving industries in order to increase productivity and remain competitive in the world market. Yet, money must also be spent on education and training programs to provide skilled, productive workers. The need for greater coordination and cooperation among government, agencies and institutions providing vocational education and training, and private industry is becoming increasingly apparent. The shift of population growth away from many cities and away from the northern industrial areas raises important related questions regarding how funds for vocational education and training should be distributed for maximum impact and benefit.

Finally one of the major problems concerning productivity is inadequate measurement techniques. Problems related to productivity measurement include: a) no universal measures, b) no definitions of changes in outputs, c) no measures of job performance, d) no idea of all the factors involved, and e) no agreement if measures are related or should be related to input or output. Productivity measures had more meaning during the war economy when there were more production jobs with similarity of standards and limited products. Shifting from an industrial to a service economy presents a strong challenge to the validity of productivity measures. Service sector outputs are difficult to measure. Current measurement techniques consider service occupations to be less productive. Vocational education will be increasingly involved in training for new and emerging

and service sector occupations. If productivity of these workers is a concern in the evaluation of the effectiveness of vocational education, accurate measurement is essential. Much progress needs to be made on the improvement of productivity measures to reflect the productivity of workers in the nation accurately.

Summary

Productivity growth depends in large part on increased investment in the education and quality of the labor force, in the amount and quality of capital investment, and in the application of new technology (Mark, 1979). Policies in the public and private sectors which stimulate these factors can, therefore, enhance productivity growth.

Identification and analysis of key economic, social, technological, demographic, and governmental trends elicits several implications for productivity growth and vocational education. Rising costs of labor and energy are likely to continue to hinder productivity growth. As the United States moves from an industrial based economy to a service based economy, the problem of accurately measuring the productivity of workers in service occupations becomes critical. Much progress needs to be made in this area.

However, in general, there is reason to be optimistic that the effects of the changing composition and characteristics of the labor force will have positive effects on productivity growth. Application of new technology is also expected to increase productivity. Vocational education and training programs can help individuals adapt to changes in the work world, apply new technical skills, and obtain jobs in which they can be most productive. Greater coordination and cooperation among the public agencies and institutions delivering vocational education and training and the private business sector is needed to formulate policies which enhance productivity growth.

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